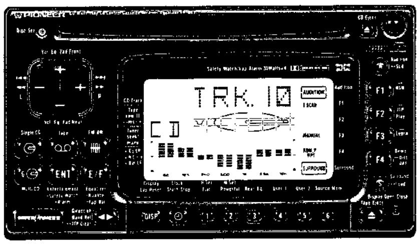
Service Manual

PIONEER
The Art of Entertainment

- FH-M75/UC



ORDER NO.
CRT1456

MULTI-CD CONTROL EQUALIZER CD FM/AM TUNER DECK AMPLIFIER

FH-M75 UC
FH-M70 ES

COMPACT
disc
DIGITAL AUDIO

- **See the service manual DEH-M980/UC (CRT1450) for the CD mechanism description and circuit description.**
- **See the separate manual CX-156 (CRT-468) for the cassette mechanism description.**
- **Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.**

CONTENTS

1. APPEARANCE 3
2. ADJUSTING THE VOLUME 4
3. COMMON FUNCTIONS 6
4. USING THE EQUALIZER/FADER-BALANCE 10
5. USING THE TUNER 17
6. USING THE TAPE DECK 24
7. PLAYING COMPACT DISCS 30
8. CONNECTING THE UNITS 41
9. SPECIFICATIONS 44
10. DISASSEMBLY 45
11. ADJUSTMENT 49
12. BLOCK DIAGRAM 71
13. CONNECTION DIAGRAM (1) (FH-M70/ES) 106
14. SCHEMATIC CIRCUIT DIAGRAM (1) (FH-M70/ES) 109
15. SCHEMATIC CIRCUIT DIAGRAM (2) (FH-M70/ES) 113
16. CONNECTION DIAGRAM (2) (FH-M70/ES) 117
17. CONNECTION DIAGRAM (1) (FH-M75/UC) 120
18. SCHEMATIC CIRCUIT DIAGRAM (1) (FH-M75/UC) 123
19. SCHEMATIC CIRCUIT DIAGRAM (2) (FH-M75/UC) 127
20. CONNECTION DIAGRAM (2) (FH-M75/UC) 131
21. CIRCUIT DIAGRAM AND P.C. BOARD PATTERN 134
22. CHASSIS EXPLODED VIEW (1) 154
23. CHASSIS EXPLODED VIEW (2) 159
24. CD MECHANISM MODULE EXPLODED VIEW 161
25. CASSETTE MECHANISM ASSY EXPLODED VIEW 165
26. PACKING METHOD 169
27. ELECTRICAL PARTS LIST 170
28. CIRCUIT DESCRIPTION 176

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS SERVICE INC. P.O. Box 1760, Long Beach, California 90801 U.S.A.
PIONEER ELECTRONICS OF CANADA, INC. 505 Cochrane Drive, Markham, Ontario L3R 8E3 Canada
PIONEER ELECTRONIC [EUROPE] N.V. Haven 1087 Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL: [03] 580-9911
© PIONEER ELECTRONIC CORPORATION 1992
FA FEB. 1992 Printed in Japan

● CD Player Service Precautions

1. For pickup unit (CGY1020) handling, please refer to Fig. 1. During replacement, handling precautions shall be taken to prevent an electrostatic discharge (protection by a short pin).
2. During disassembly, be sure to turn the power off since an internal IC might be destroyed when a connector is plugged or unplugged.
3. This device employs an inverter as the power supply for the EL. The inverter has an output voltage reach approximately 300 volts (AC) under no-load condition and about 100 volts (AC), with the EL connected. Utmost care should be used not to suffer from a possible electric shock, accordingly.
4. Whenever the amplifier may be put into operation, a heat sink should be mounted. ICs and transistors may be damaged if the amplifier should be put into operation without mounting any heat sink.
5. It should be noted that the heat sink is hot during a high-power operation.

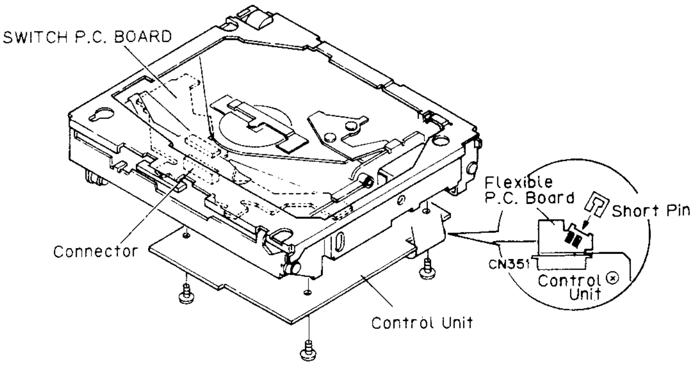


Fig. 1

SAFETY INFORMATION (UC MODEL)

CAUTION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.

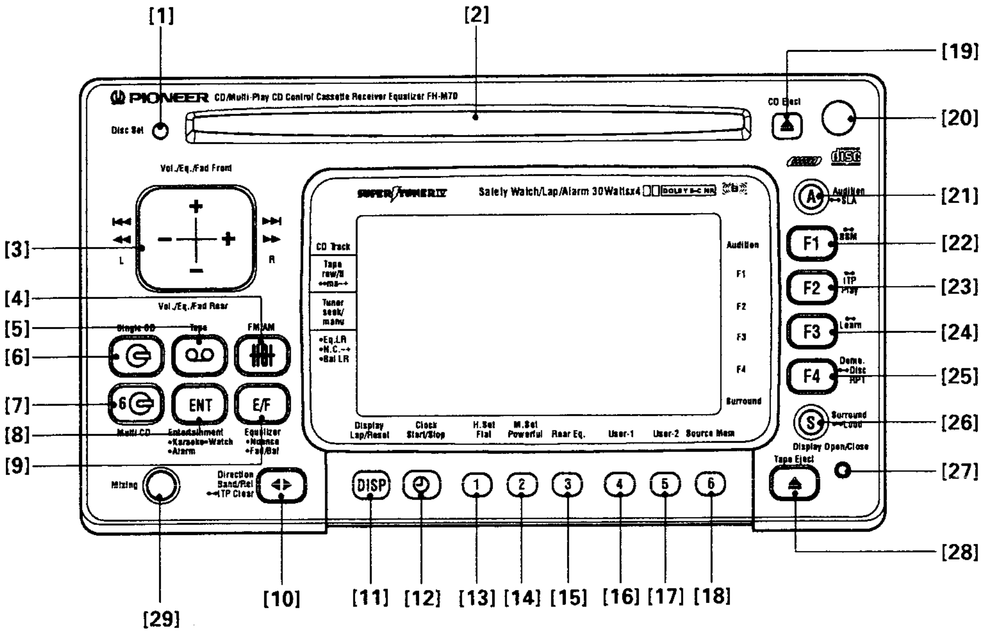
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

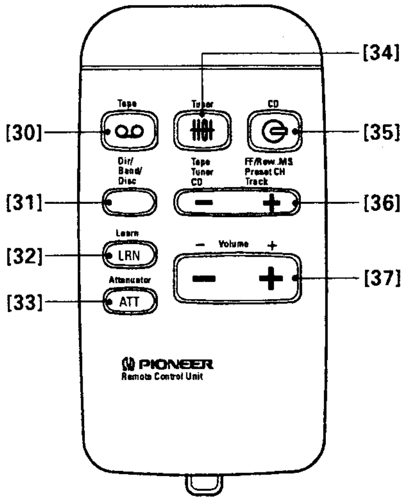
Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5). When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

1. APPEARANCE

Main Unit


[1]
[2]
[3]
[4]
[5]
[6]
[7]
[8]
[9]
[10]
[11]
[12]
[13]
[14]
[15]
[16]
[17]
[18]
[19]
[20]
[21]
[22]
[23]
[24]
[25]
[26]
[27]
[28]
[29]
PIONEER CD/Multi-Play CD Control Cassette Receiver Equalizer FH-M70
Disc Set
CD Eject
Vol./Eq./Fad Front
L
R
Vol./Eq./Fad Rear
Single CD
Tape
FM/AM
ENT
E/F
Multi CD
Entertainment
•Karaoke•Watch
•Alarm
Equalizer
•Nuance
•Fad/Bal
Mixing
Direction
Band/Rel
←→ITP Clear
Safety Watch/Lap/Alarm 30Wattsx4
CD Track
Tape
rew/ff
←→ms→+
Tuner
seek/
manu
•Eq.LR
•N.C.→+
•Bal LR
Audition
F1
F2
F3
F4
Surround
Display
Lap/Reset
Clock
Start/Stop
H.Set
Flat
M.Set
Powerful
Rear Eq.
User-1
User-2
Source Mem
DISP
1
2
3
4
5
6
Audition
←→SLA
BSM
ITP
Play
Learn
Demo.
←→Disc
RPT
Surround
←→Loud
Display Open/Close
Tape Eject

Remote Controller


[30]
[31]
[32]
[33]
[34]
[35]
[36]
[37]
Tape
Tuner
CD
Dir/
Band/
Disc
Tape
Tuner
CD
FF/Rew.MS
Preset CH
Track
Learn
LRN
Attenuator
ATT
Volume
PIONEER
Remote Control Unit

2. ADJUSTING THE VOLUME

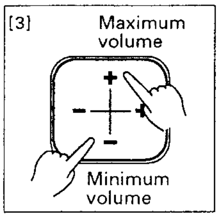
- For details on use of the tuner, see "Using the Tuner" on page 17.
- For details on tape listening, see "Using the Tape Deck" on page 24.
- For details on CD listening, see "Playing Compact Discs" on page 30.

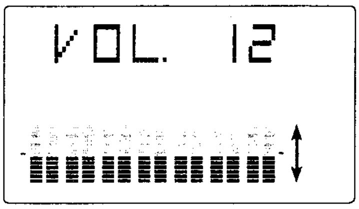
Volume Control

Main unit operation:
Adjust the button [3] vertically.

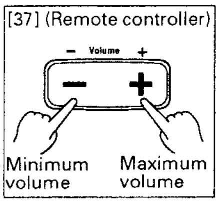
Remote control operation:
Adjust the button [37].

- When you're adjusting the volume, the previous display will return 8 seconds after releasing your finger from the button.





Max. 30
Min. 0

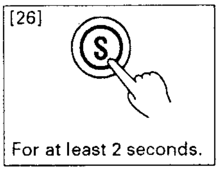


Note:
- *Always keep the volume inside the car at a level that allows you to hear outside sounds.*
- *Avoid high-volume listening for long periods while the car engine is OFF or idling since this may exhaust the battery.*

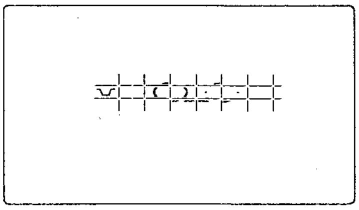
Using Loudness

The loudness function provides additional power to the low and high sound frequencies during low-volume listening.

Hold down the button [26] for at least 2 seconds.
(Press more than 2 seconds again to release.)
- Holding down the button for less than 2 seconds changes the unit to surround ON/OFF.
(For details, see "Using the Surround Function" on page 9.)
- When the power is turned on for the first time after installation of the unit or the clear button has been pressed, the loudness is ON.

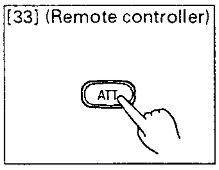


The loudness indicator will come on when it is turned on.
The loudness indicator will go off when it is released.

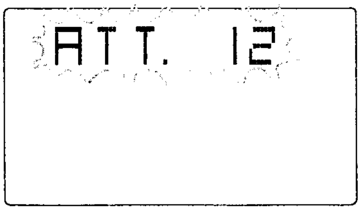


Lowering the Volume Instantly (Attenuator)

Press the button [33] to lower the volume to about 1/10 of its current setting.
(Press again to restore the original volume level.)
- This function can only be performed using the remote controller.



Indicator flashes



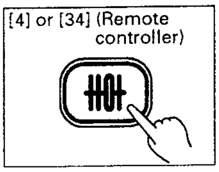
Using the Source Levelizer Adjuster (SLA)

Switching to CD playback after listening to an FM broadcast at a certain volume level may cause the sound volume to increase suddenly. This is caused by the difference between the FM broadcast output level and the CD recording level.

The source levelizer adjuster allows you to adjust for differences in volume, based on the FM volume level, after changing to the other sources (FM, AM, Tape, CD).

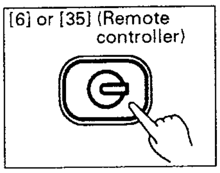
1. **Tune to an FM radio broadcast and adjust the FM volume level.**

   (For details, see "Using the Tuner" on page 17.)



2. **Change the unit to CD playback.**

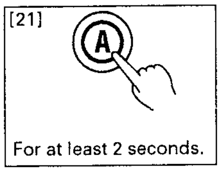
   Check the difference in volume when FM is changed to CD.
   (For details, see "Playing Compact Discs" on page 30.)
   - The same output balance is stored in memory for the built-in CD player and the multi-play CD player.



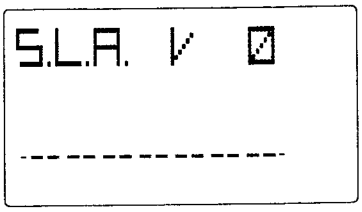
3. **Specify the SLA mode.**

   Hold down the button [21] for at least 2 seconds.
   (Press again to release.)
   - Holding down the button for less than 2 seconds changes the unit to audition ON/OFF.
     (For details, see "Using the Audition Fonction" on page 8)

Note:
- *The next operation should be performed within 8 seconds after changing to the SLA mode; if not, the mode is automatically released after 8 seconds have elapsed.*



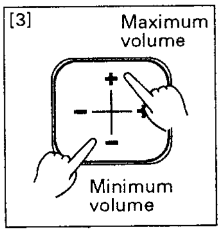
The present level is indicated.

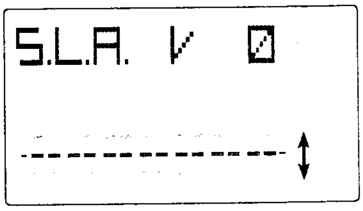


4. **Adjust the output balance.**

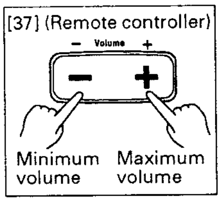
   Adjust the CD volume based on the difference in volume to the FM volume.

   Main unit operation:
   Adjust the button [3] vertically.
   Remote control operation:
   Adjust the button [37].





High V +4
Low V -4



5. **Adjust the volume for the other sources.**

   Perform steps 3 to 4 for the other sources (AM, tape deck), with the exception of the CD player.

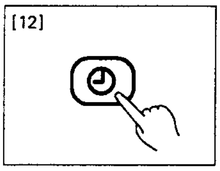
- Since the output balance control is based on the FM volume level, the FM volume level cannot be adjusted when an FM broadcast is being received.
- For details on the use of the tape deck, CD player, or FM/AM listening, see the pages with their respective explanations.

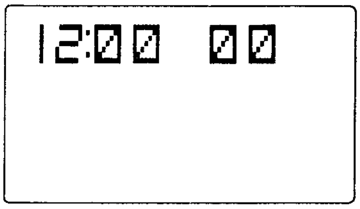
3. COMMON FUNCTIONS

Using the Clock Display

Turning on the Clock Display

Pressing the button [12] will change the message display component to clock display.
(Press again to release.)





- When the clock display is ON, pressing any button will turn the clock display OFF. The clock display will turn on again 25 seconds after the button operation.
- If the ignition switch is at either the ON or ACC position, you can change to clock display even when the unit is OFF.

Note:
- *Avoid using the clock display for long periods while the car engine is OFF since this may exhaust the battery.*

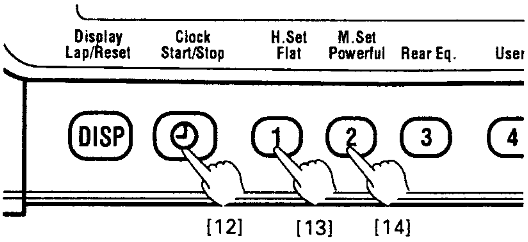
Adjusting the Clock

Adjusting the Hours

While holding down button [12], press button [13].
Each press of button advances the hour setting by one hour, and holding it down advances it at high speed.

Adjusting the Minutes

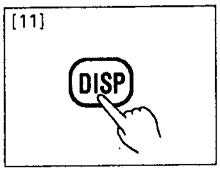
While holding down button [12], press button [14].
Each press of the button advances the minutes setting by one minute, and holding it down advances the setting at high speed.



- After completing the minute adjustment, releasing button [12] will start the clock operation from 0 second. For greater accuracy, synchronize the release of the button with a time report. If only the hour has been adjusted, the clock will not start from 0 second when the button is released.

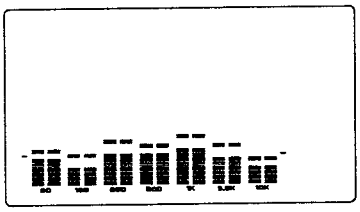
Changing the Display

Each press of the button [11] changes the display as shown below.



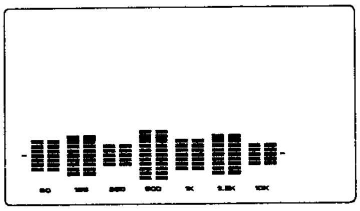
1. Peak Bound

The sound intensity at every frequency is displayed by height.



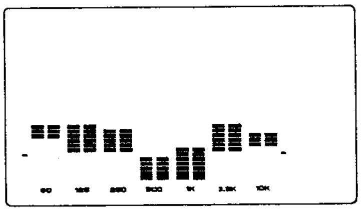
2. Symmetric

The sound intensity at every frequency is displayed by width.



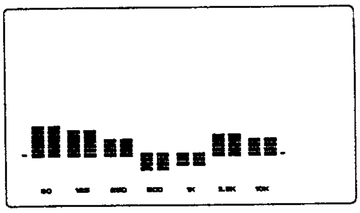
3. Equalizer Curve Symmetric

Centering on the figure of the equalizer curve, the sound intensity at each frequency is displayed by width.



4. Equalizer Curve

Display from the equalizer curve figure to flat (center).



5. Spectrum Analyzer Scan

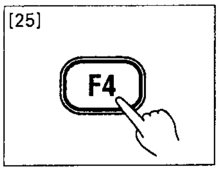
Indicates the four displays of (1), (2), (3), (4) in succession for about 10 seconds each.

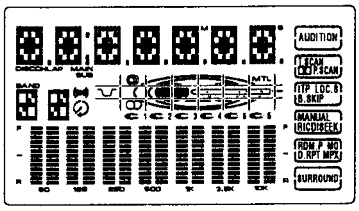
Using the Self-Demonstration Function

When the unit is OFF, the self-demonstration indications can appear on the display.

Pressing the button [25] while the unit is OFF begins the self-demonstration function.
(Press again to release.)

- See the sections on turning the unit OFF on the pages explaining radio, tape or CD.
- When the power is turned on for the first time after installation of the unit or the clear button has been pressed, the unit is set so that the self-demonstration function will begin.





Note:

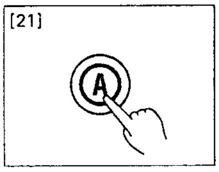
- *The self-demonstration indications will not appear when the clock display is ON. Release the clock display. (For details, see "Turning on the Clock Display" on page 6.)*
- *The self-demonstration indications will not appear when the ignition switch is OFF position. Turn the ignition switch to ON or ACC position.*
- *Avoid using the self-demonstration for long periods while the car engine is OFF since this may exhaust the battery.*

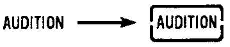
Using the Audition Function

Turning the audition function ON during tape or CD play will cause the voice of the singer will fade.
Using this function, you can enjoy karaoke performance.

Pressing the button [21] turns the audition function ON.
(Press again to release.)

- Holding down the button for at least 2 seconds changes the unit to the SLA mode.
  (For details, see "Using the Source Levelizer Adjuster" on page 5.)





Note:

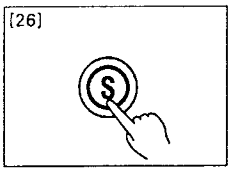
- *The audition function operates during tape or CD play. It will not operate when receiving the radio.*
- *The audition function will not function on multi-sound karaoke CD.*
- *The audition function operates for music recorded in stereo and will not function for music recorded in monaural.*
- *Depending on the music, the singer's voice may remain even though the music is recorded in stereo. Also, when the singer's voice has been recorded with an echo effect, it may not be possible to erase the echo and the singer's voice may be audible after a delay.*

Using the Surround Function

The surround function allows you to enjoy the powerful real feel of a concert hall or studio.

Pressing the button [26] turns the surround function ON. (Press again to release.)

- Holding down the button for at least 2 seconds changes the unit to loudness ON/OFF. (For details, see "Using Loudness" on page 4.)



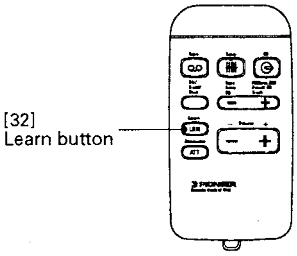
SURROUND
SURROUND

Note:

- *The surround function's effect operates with a 2 amplifier - 4 speaker system. The surround effect will not function with a 2 speaker system.*
- *The surround effect will not function with a monaural source.*
- *When the surround function is working, it is not possible to adjust the left and right balance of the rear speakers.*
- *The surround effect will vary, depending on the music source. The volume from the rear speaker may increase. In this case, use the fader to adjust the volume between front and rear speakers.*
  (For details, see "Adjusting the Fader" on page 16.)

Using the Learning Function on the Remote Controller

You can use the learn button on the remote controller to record an operation button from the main unit, thus allowing you the convenience of activating a frequently used button with the remote controller.



1. Specify the learning mode.

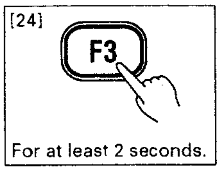
While the unit is ON, hold down the button [24] for at least 2 seconds.

When learning mode has been specified, "LEARN" will be indicated on the display.

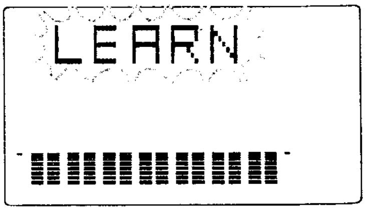
- Holding down the button for less than 2 seconds changes to the function of the source you are currently hearing (tuner, tape, CD).

Note:

- *The next operation should be performed within 8 seconds after changing to the learnig mode; if not, the mode is automatically released after 8 seconds have elapsed.*



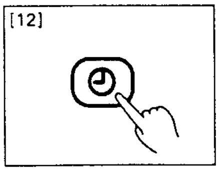
Indicator flashes



2. Memorize the desired button.

Press the button on the main unit that you want memorized on the remote controller.

When memorization is completed, "LEARN" will go off and the message display will return to its previous state. You can now use the learn button on the remote controller to perform the same operation as the button on the main unit.



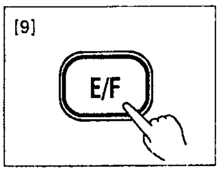
Example: Memorizing the clock display button

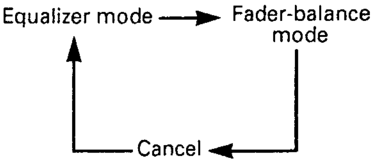
4. USING THE EQUALIZER/FADER-BALANCE

Selecting Equalizer/Fader-Balance Mode

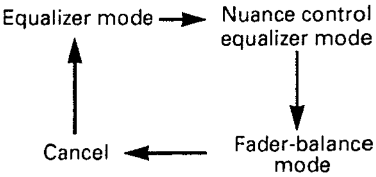
The graphic equalizer can be operated while the unit is in to equalizer mode. The fader and the balance can be adjusted while the unit is in fader-balance mode.

Each press of the button [9] switches the modes as shown on the right.




Equalizer mode
Fader-balance mode
Cancel

The equalizer curve's "powerful curve" and "rear speaker equalizing curve" are both stored in the unit's memory. Recalling either of these curves in equalizer mode will cause the modes to switch as shown on the right each time you press the button [9].
(For details, see "Recalling Equalizer Curves" and "Using the Nuance Control Equalizer" on page 12.)

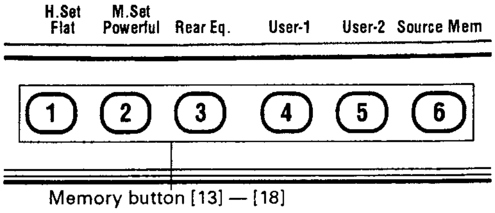

Equalizer mode
Nuance control equalizer mode
Fader-balance mode
Cancel

Note:
- *Operations should be performed within 8 seconds of each other; otherwise, both the equalizer and fader-balance modes are automatically released after 8 seconds have elapsed.*

Using the Graphic Equalizer

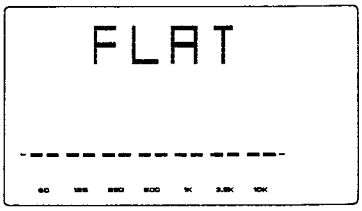
The Equalizer Curve Stored in the Unit's Memory (Original Preset)

The below equalizer curves are stored in the unit's memory buttons ① — ③ ([13] — [15]).
(For details, see "Recalling Equalizer Curves" on page 12.)
You can also store your own equalizer curves in the memory buttons ④ — ⑥ ([16] — [18]).
(For details, see "Memorizing Equalizer Curves" on page 15.)


H.Set
Flat
M.Set
Powerful
Rear Eq.
User-1
User-2
Source Mem
1
2
3
4
5
6
Memory button [13] — [18]

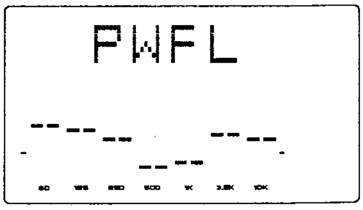
①. ([13]) Flat Curve

Indicates unadjusted sound quality.
Alternately swithing between the equalizer curve you have set and the flat curve is a convenient way to check the effect of the equalizer.



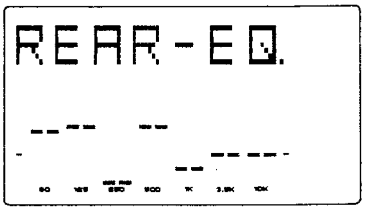
②. ([14]) Powerful Curve

Weaker bass and treble sounds can be adjusted to powerful sounds.



③. ([15]) Rear Speaker Equalizing Curve

Adjust the frequency response inside the vehicle so that the sound will be natural regardless of the type of vehicle.



Recalling Equalizer Curves

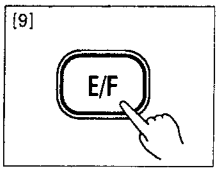
It is possible to recall equalizer curves stored in memory.

1. **Specify equalizer mode.**

   (For details, see "Selecitng Equalizer/Fader-Balance Mode" on page 10.)

Note:

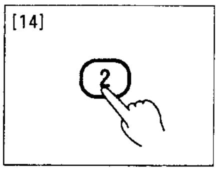
- *The next operation should be performed within 8 seconds after switching to the equalizer mode; if not, the mode is automatically released after 8 seconds have elapsed.*



2. **Recall the equalizer curve.**

   Press the memory button in which the desired equalizer curve is stored.

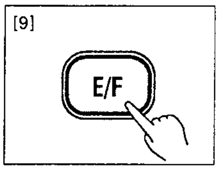
Example: Recalling a powerful curve

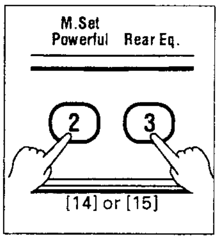


Using the Nuance Control Equalizer

It is possible to fine tune (nuance control) the equalizing curves in the powerful curve and the rear speaker equalizing curve after they are recalled.

1. **Specify equalizer mode and recall the powerful curve or rear speaker equalizing curve.**



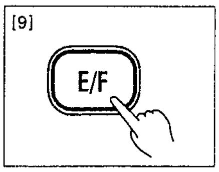


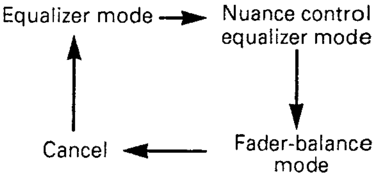
2. **Specify nuance control equalizer mode.**

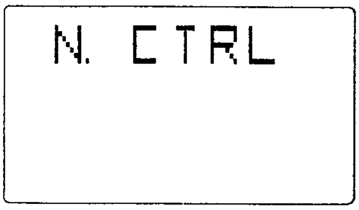
   Press button [9] within 8 seconds of recalling either the powerful curve or rear speaker equalizing curve to switch to nuance control equalizer mode.

- When you have recalled either the powerful curve or the rear speaker equalizing curve, each press of the button [9] will switch the modes as shown on the right.

  When the mode has switched to nuance control equalizer mode, "N. CTRL" will be displayed in the message display component.

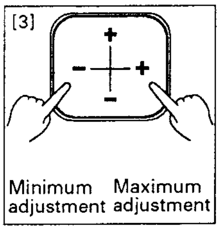




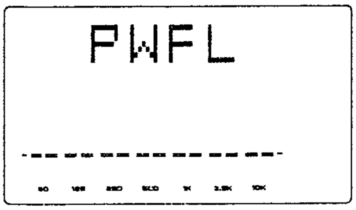


3. Fine tune.

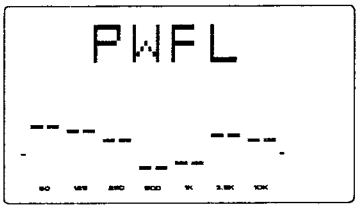
Adjust button [3] leftwards and rightwards.


[3]
+
–
+
–
Minimum adjustment
Maximum adjustment

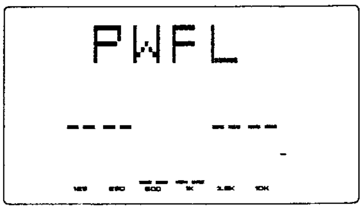
Minimum adjustment



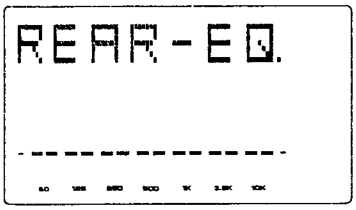
Normal adjustment
Powerful curve

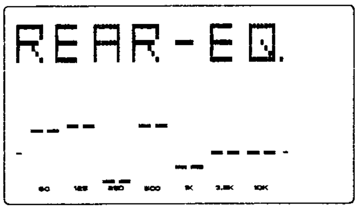


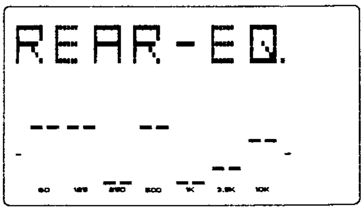
Maximum adjustment



Rear speaker equalizing curve





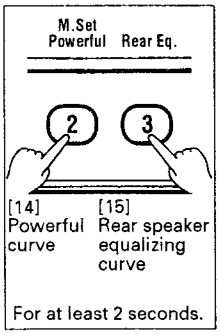


- When the curve is next recalled, an equalizer (nuance controlled) curve is recalled.

Returning to the Previous Setting before Nuance Control

The fine tuned (nuance controlled) equalizer curve can be returned to the previous setting before using the nuance control.

Hold down the memory button for at least 2 seconds when the mode is in either equalizer mode or nuance control equalizer mode.
When it has returned to the previous setting, "CLEAR" is scrolled across the message display component.

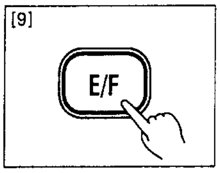

M.Set
Powerful
Rear Eq.
2
3
[14] Powerful curve
[15] Rear speaker equalizing curve
For at least 2 seconds.

Setting Equalizer Curves

1. Specify equalizer mode.

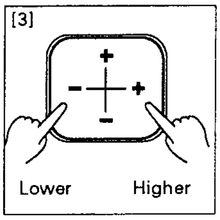
Note:

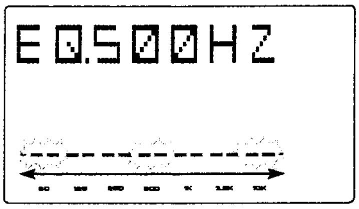
- *The next operation should be performed within 8 seconds after switching to the equalizer mode; if not, the mode is automatically released after 8 seconds have elapsed.*



2. Set the desired frequency.

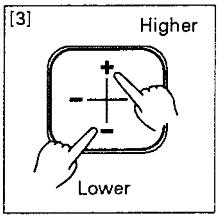
Adjust the button [3] leftwards and rightwards.

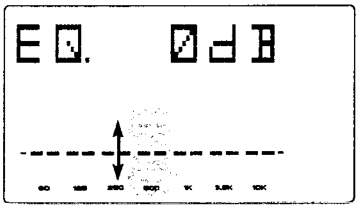




3. Set the desired level.

Adjust the button [3] vertically.





4. Set another frequency.

Repeat steps 2 and 3.

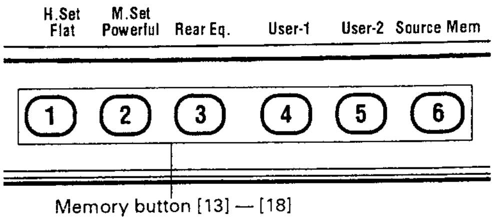
- You can set an equalizer curve easily if you set it when you have recalled either the powerful curve or the rear speaker equalizing curve after the first step. (For details, see "Recalling Equalizer Curves" on page 12.)

Note:

- *Recalling a second equalizer curve will reset the first curve. If you wish to preserve the equalizer curve, for details, see "Memorizing Equalizing Curves" on page* 15.

Memorizing Equalizer Curves

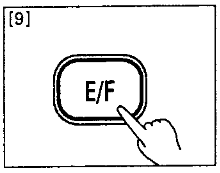
You can record the equalizer curve you set in the memory buttons ④ — ⑥ ([16] — [18]) of the unit.
You can store an equalizer curve common to all sources (FM, AM, tape, CD) in memory buttons ④ and ⑤. ([16] [17]) (User's curve 1 and 2)
You can set and store equalizer curves differing by source in memory button ⑥. ([18]) (Source memory)



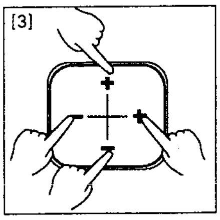
Memory button [13] — [18]

1. **Specify equalizer mode.**
   When you wish to store different equalizer curves for each source in memory button 6, change to the desired source before switching to equalizer mode.

Note:
- *The next operation should be performed within 8 seconds after switching to the equalizer mode; if not, the mode is automatically released after 8 seconds have elapsed.*

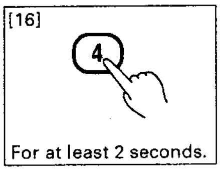


2. **Set the equalizer curves to your liking.**
   (For details, see "Setting Equalizer Curves" on page 14).



3. **Memorize the setting.**
   Hold down the button for at least 2 seconds (a beep sounds). When memorization is completed, "MEMORY" is scrolled across the message display component.
   - Holding down the button for less than 2 seconds will recall the equalizer curve.
   (For details, see "Recalling Equalizer Curves" on page 12.)

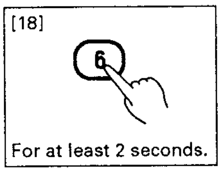
Example: Storing an equalizer curve in user's curve 1



Storing Equalizer Curves in Memory by Source

You can set equalizer curves by source in memory button ⑥. (Curves for each of the 4, FM, AM, tape and CD can be memorized.)

Set equalizer curves in accordance with the sound quality of individual sources when listening to each source and store them in memory button ⑥. (Repeat steps 1 — 3 above for each source.) This will allow the equalizer curve to be switched automatically when you change sources, making it easier to use the equalizer curve for the source you are listening to.



- The same equalizer curves can be memorized for the built-in CD player and for the multi-play CD player.
- See the pages on listening to the FM, AM, tape and CD.

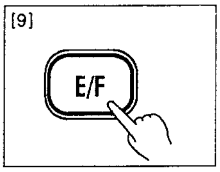
Using the Fader-Balance

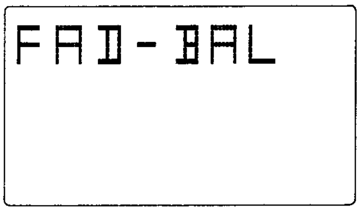
Specify fader-balance mode to adjust the balance between the front and rear speakers, and left and right speakers.

Press the button [9] to specify fader-balance mode.
(For details, see "Selecting Equalizer/Fader-Balance Mode" on page 10.)
When the mode has switched to fader-balance mode, "FAD-BAL" is displayed.

Note:

- *The next operation should be performed within 8 seconds after changing to the fader-balance mode; if not, the mode is automatically released after 8 seconds have elapsed.*

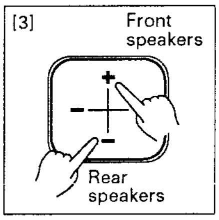


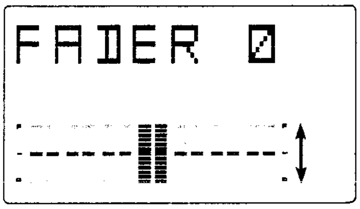


Adjusting the Fader

Adjust the button [3] vertically.

- In the case of a 2-speaker system, set the display to "FADER 0".

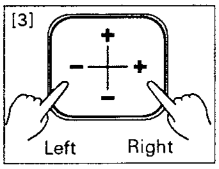


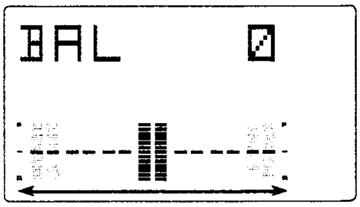


Front F.FRONT9
Rear F.REAR 9

Adjusting the Balance

Adjust the button [3] leftwards and rightwards.





Left B.LEFT9
Right B.RIGHT9

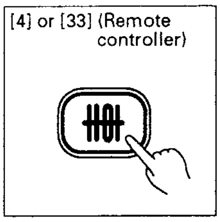
5. USING THE TUNER

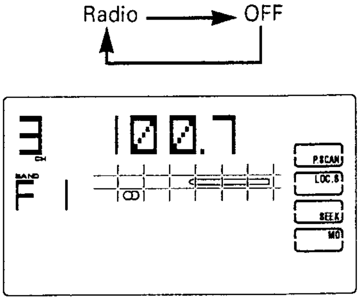
- **FH-M75/UC**

Listening to the Radio

Selecting the Radio

Each press of the button [4] or [33] changes the unit as shown on the right.

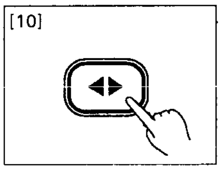

[4] or [33] (Remote controller)

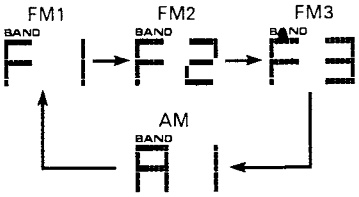

Radio
OFF
BAND
CH
F1
3
100.7
P.SCAN
LOC.S
SEEK
MO

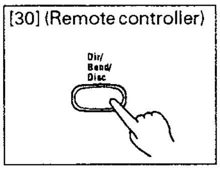
Selecting the Band

Each press of the button [10] or [30] changes the band as shown on the right.

- The three FM band divisions, FM1, FM2, and FM3, have been provided to allow three different FM stations to be memorized to a single button. The reception frequency band, however, is the same for all three divisions. (For details, see "Using the Preset Memory" on page 21.)




FM1
FM2
FM3
BAND
F1
F2
F3
AM
A1

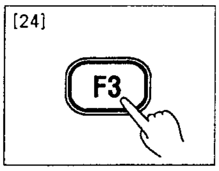

[30] (Remote controller)
Dir/
Band/
Disc

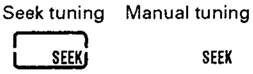
Radio Tuning

Tune in a station using either seek tuning or manual tuning.

Each press of the button [24] switches between seek tuning mode and manual tuning mode.

- Holding down the button for at least 2 seconds changes the unit to the remote control learn mode.
  (For details, see "Using the Learning Function on the Remote Controller" on page 18.)

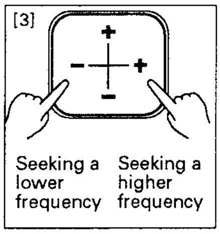




Seek Tuning

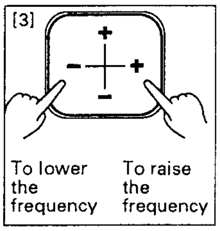
Seek tuning automatically receives a band with a frequency above a certain level. It is possible to change the level. (For details, see "Using Local Mode" on this page.)

Operate using the button [3] leftwards and rightwards when the unit is in seek tuning mode.
When the button is pressed, seek tuning begins searching for a station, then stops when it finds one.
(Press again to cancel seek tuning.)



Manual Tuning

Operate using the button [3] leftwards and rightwards when the unit is in manual tuning mode.
(Holding the button down changes the frequency at high speed.)



- The frequency changes in 0.2 MHz steps in the FM band and in 10 kHz steps in the AM band.

Note:

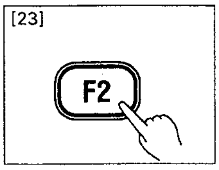
- *Seek tuning and manual tuning will not function when the unit is in either equalizer or fader-balance mode. Make sure these modes are OFF before using these functions.*
  (For details, see "Selecting Equalizer/Fader-Balance Mode" on page 10.)

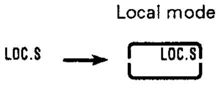
Using Local Mode

Operate seek tuning after the unit is switched to local mode to enable the tuner to limit reception to stations with comparatively strong transmission signals. This is convenient for tuning in to AM stations at night, when reception is weak and full of noise.

Press the button [23] to switch to local mode.
(Press again to release.)

- For details on seek tuning, see "Radio Tuning" on this page.





- **FH-M70/ES**

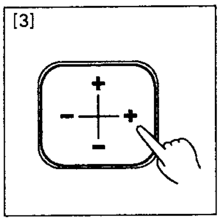
Before Listening to the Radio

Changing the Tuning Step

The main unit allows you to specify a tuning step of either 9 kHz or 10 kHz for the AM band. (The initial setting is 9 kHz.)
When used in North America, Central America, or South America, the tuning step should be changed to 10 kHz.

Specifications		Initial setting	New setting
AM	Tuning steps	9 kHz steps	10 kHz steps
	Frequency range	531 — 1,602 kHz	530 — 1,710 kHz

While pressing right side ((+) side) of the button [3], turn the ignition switch from OFF to ON.

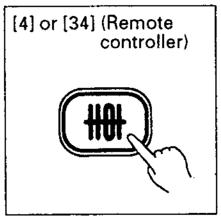


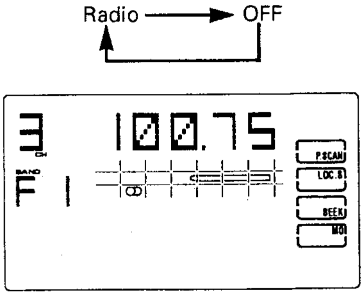
Note:
- *Changing the tuning step erases all frequencies that have been recorded in the preset memory.*
- *A break in the battery connection or pressing the clear button returns the tuning step setting to 9 kHz.*

Listening to the Radio

Selecting the Radio

Each press of the button [4] or [34] changes the unit as shown on the right.

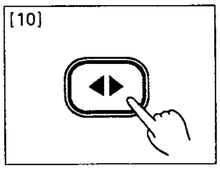

[4] or [34] (Remote controller)

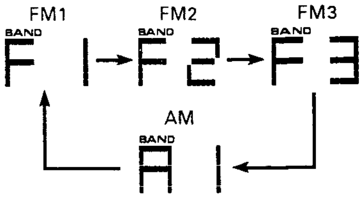

Radio
OFF
3
100.75
F 1
BAND
P.SCAN
LOC.S
SEEK
MOI

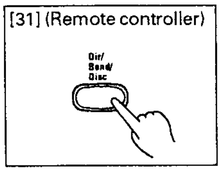
Selecting the Band

Each press of the button [10] or [31] changes the band as shown on the right.

- The three FM band divisions, FM1, FM2, and FM3, have been provided to allow three different FM stations to be memorized to a single button. The reception frequency band, however, is the same for all three divisions. (For details, see "Using the Preset Memory" on page 21.)




FM1
FM2
FM3
BAND
F 1
F 2
F 3
AM
A 1

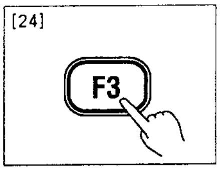

[31] (Remote controller)
Dir/Band/Disc

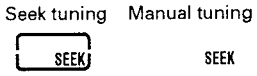
Radio Tuning

Tune in a station using either seek tuning or manual tuning.

Each press of the button [24] switches between seek tuning mode and manual tuning mode.

- Holding down the button for at least 2 seconds changes the unit to the remote control learn mode.
  (For details, see "Using the Learning Function on the Remote Controller" on page 9.)

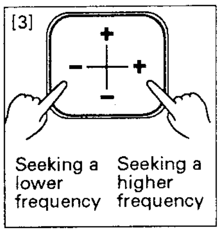




Seek Tuning

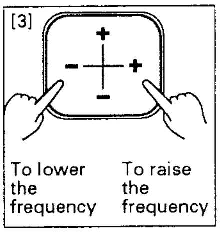
Seek tuning automatically receives a band with a frequency above a certain level. It is possible to change the level. (For details, see "Using Local Mode" on this page.)

Operate using the button [3] leftwards and rightwards when the unit is in seek tuning mode.
When the button is pressed, seek tuning begins searching for a station, then stops when it finds one.
(Press again to cancel seek tuning.)



Manual Tuning

Operate using the button [3] leftwards and rightwards when the unit is in manual tuning mode.
(Holding the button down changes the frequency at high speed.)



- The frequency changes in 50 kHz steps in the FM band and in 9 kHz steps in the AM band.

Note:

- *The tuning step in the AM band changes to 10 kHz when the procedure described in "Changing the Tuning Step" on page 19 is performed.*

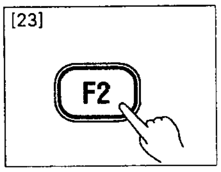
- *Seek tuning and manual tuning will not function when the unit is in either equalizer or fader-balance mode. Make sure these modes are OFF before using these functions.*
  (For details, see "Selecting Equalizer/Fader-Balance Mode" on page 10.)

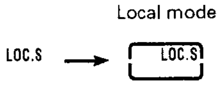
Using Local Mode

Operate seek tuning after the unit is switched to local mode to enable the tuner to limit reception to stations with comparatively strong transmission signals. This is convenient for tuning in to AM stations at night, when reception is weak and full of noise.

Press the button [23] to switch to local mode.
(Press again to release.)

- For details on seek tuning, see "Radio Tuning" on this page.

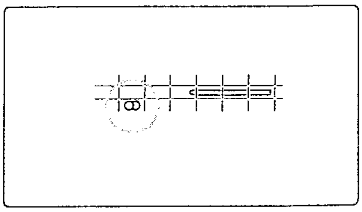




- **FH-M75/UC, FH-M70/ES**

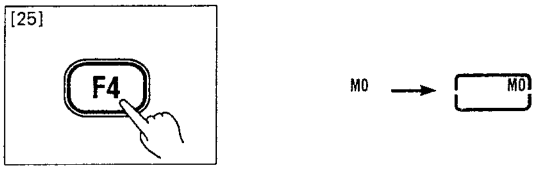
FM Stereo Broadcasts

The ⓢ indication appears on the display during the reception of FM stereo broadcasts.



Noise in FM Stereo Broadcasts

If you feel there is too much noise in a FM stereo broadcast, press the button [25]. The reception switches to monaural and the noise is reduced.
(Press again to return to stereo reception.)



Memorizing a Station

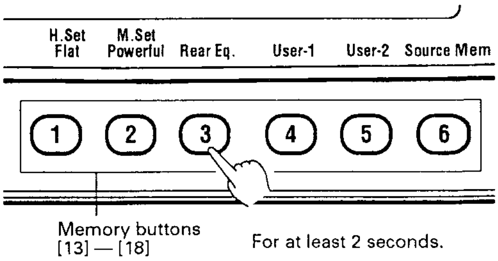
Using the Preset Memory

The unit can store the station being received in memory buttons ① — ⑥ ([13] — [18]).

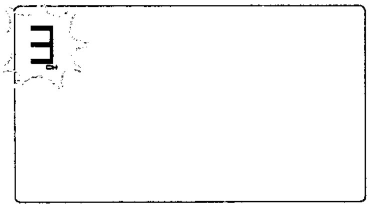
When you have selected the desired station, hold down the number of the button in you wish to store the station for at least 2 seconds (until a beep sounds).
The number of the button you have pressed will flash on the display until the memorization is completed.

- Holding down the button for less than 2 seconds changes the unit to the preset tuning mode.
  (For details, see "Preset Tuning" on page 23.)

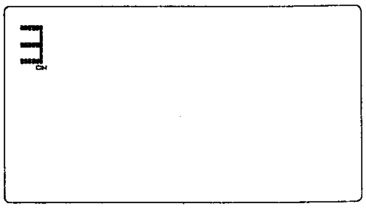
Example: Storing a station in memory button ③.



For at least 2 seconds.



Indicator flashes during memorization



Indicator stops flashing when stored

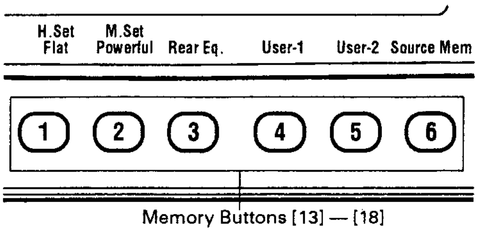
- If the selected button holds a previously stored station, the old station is erased and replaced with the new station.
- Up to 18 FM stations (6 stations each for FM1, FM2, and FM3), and 6 AM stations can be memorized.

Note:

- *Preset memory will not function when the unit is in either equalizer or fader-balance mode. Make sure these modes are OFF before using this function.*
  (For details, see "Selecting Equalizer/Fader-Balance Mode" on page 10.)

Using Best Stations Memory (BSM)

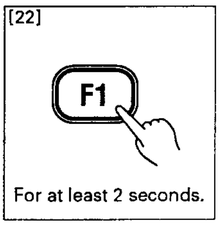
BSM automatically tunes in 6 stations with strong receptions, and stores them in memory buttons ① — ⑥ ([13] — [18]) (either FM1, 2, 3 or AM).

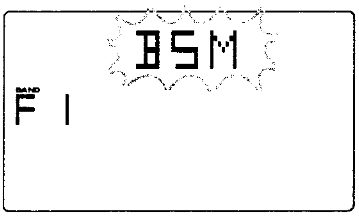

H.Set
Flat
M.Set
Powerful
Rear Eq.
User-1
User-2
Source Mem
1
2
3
4
5
6

Memory Buttons [13] — [18]

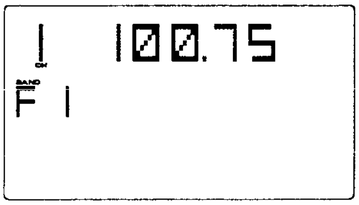
Select the band you wish to memorize, and hold down the button [22] for at least 2 seconds (until a beep sounds). "BSM" flashes in the message display component until memorization is completed.
(Press again to release.)

- Holding down the button for less than 2 seconds switches the unit to preset scan tuning.
  (For details, see "Preset Scan Tuning" on page 23.)
- Stations with strong receptions are stored in memory buttons ① to ⑥.
- When the number of stations with strong receptions is less than 6, the preset stations in the memory buttons remain unchanged.
- If there are few strong stations in the area, BSM operation continues for about 30 seconds before turning off.


[22]
F1
For at least 2 seconds.



BSM starts
Indicator flashes



BSM ends
Station memorized to memory button ①

Using Preset Tuning and Preset Scan Tuning

Preset tuning allows you to recall one station recorded in a memory button. Preset scan tuning allows you to recall 6 preset stations in consecutive order recorded in the memory buttons.

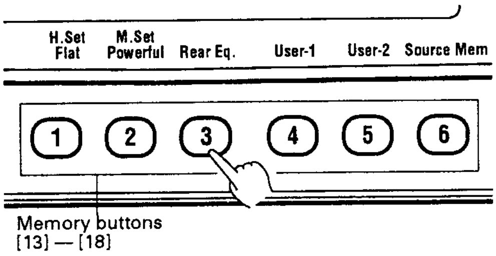
Preset Tuning

Preset tuning recalls stations recorded in the memory buttons.

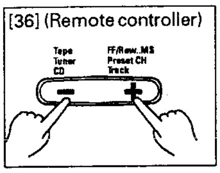
Main unit operation:
Press the button in which the desired station is recorded.

- Holding down the button for at least 2 seconds changes the unit to the preset memory.
  (For details, see "Using the Preset Memory" on page 21.)

Example: Recalling the station stored in memory button ③.



Remote control operation:
Each press of the respective side of the button [36] shifts the memory button as shown on the right.



Pressing +: 1 → 2 → 3 → ···

Pressing –: 6 → 5 → 4 → ···

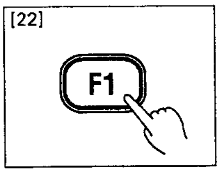
> **Note:**
> - *Preset tuning will not function by the main unit operation when the unit is in either equalizer or fader-balance mode. Make sure these modes are OFF before using this function.*
>   *(For details, see "Selecting Equalizer/Fader-Balance Mode" on page 10.)*

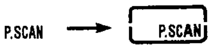
Preset Scan Tuning

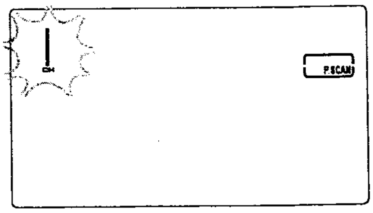
Preset scan tuning recalls the stations recorded in the memory buttons in consecutive order for about 8 seconds each.

Press the button [22] to recall stations recorded in the memory buttons in consecutive order, beginning with the station recorded in memory button ①. The number of the button being recalled will flash on the display.
When you have received the desired station, press the button again to cancel the function. You will then be able to receive the station continuously.

- Holding down the button for less than 2 seconds switches the unit to BSM.
  (For details, see "Using Best Stations Memory" on page 22.)







Indicator flashes

6. USING THE TAPE DECK

Cassette Tape Handling

- *Do not place tapes near magnets.*
- *Store tapes in a place not subject to direct sunlight.*
- *Rewind cassettes and store them in their cases when not in use.*

Precautions on Cassette Play

- *A dirty playback head is a cause of a variety of problems, such as loss of high frequencies, poor sound quality, and reduced sound output. To maintain optimum sound quality, the playback head should be cleaned periodically.*
  (For details, see "Head Cleaning" on page 29.)
- *When a tape is unevenly wound, the higher force required to move it may activate the tape end detection and cause tape play to automatically switch directions. If this occurs, use fast forward or rewind to wind the tape evenly before attempting playback.*
  (For details, see "Using Fast Forward, Rewind, and Music Search" on page 27.)

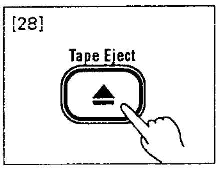
Listening to a Cassette

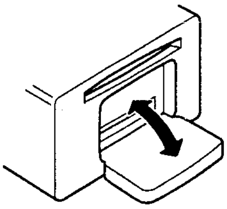
Opening and Closing the Display

The unit incorporates an open and close display. Open the display to find the cassette slot.

Press the button [28] to open the display.
Press again to close the display.

- The display will close automatically if you lift it slightly.





Precautions on Open-and-Close Display:

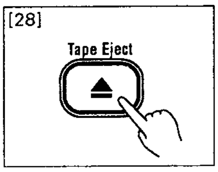
- *Do not place objects on the display after opening and do not press downwards as this may result in breakdown.*
- *Avoid catching objects while opening and closing the display. Should the display stop while being opened or closed because something is caught in the display, the tape function will stop. In this case, remove the obstacle and press the button [28]. The function will then return to normal.*

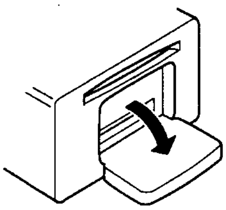
Loading a Cassette

Before Loading a Cassette:

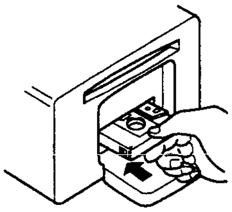
- *A loose or warped label on a cassette may interfere with the eject mechanism of the deck, or cause the cassette to become jammed in the deck. Labels in such condition should be removed completely before loading the cassette.*
- *Do not use C-120 (120-minute) cassettes. The tape is very thin and can stretch and cause poor operation.*

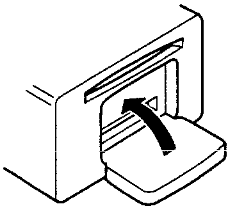
1. **Open the front panel.**





2. **Insert a cassette.**
   The cassette is automatically loaded and play begins.

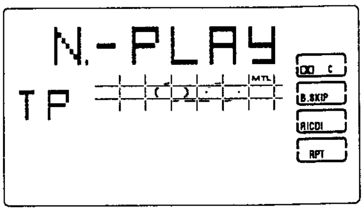




When play begins, the following words will be indicated in the message display component.

N.-PLAY: Normal play
(Indicated when the upper side of the tape facing you is played.)

R.-PLAY: Reverse play
(Indicated when the lower side of the tape is played.)

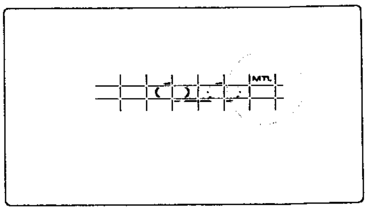


Note:

- *A defect in the cassette, such as broken or tangled tape, may cause the unit to turn off, or cycle ON and OFF without playing. If this occurs, eject the cassette and check it for defects.*
  (For details, see "Ejecting a Cassette" on page 26.)

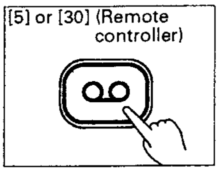
The Metal Tape Display (Auto Tape Selector)

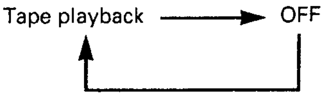
The main unit automatically detects the tape type when a cassette is loaded, then sets the play equalization to the proper level (70µs/120µs). When metal tape or CrO_2 tape is loaded, MTL appears on the display. No indication appears for normal tape.



Turning Tape Playback ON/OFF

When the cassette tape is loaded, press the button [5] or [30] to switched as shown on the right.

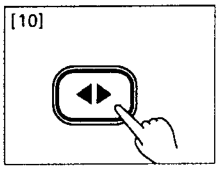

[5] or [30] (Remote controller)

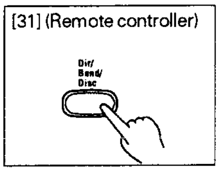

Tape playback
OFF

Changing Tape Direction

Press the button [10] or [31] to switch between the A side and B side of the tape.

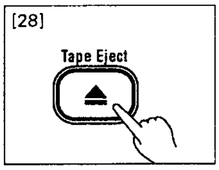
- Performing this procedure during fast forward, rewind, music search, or music repeat, ends the respective function, but does not change the tape direction.

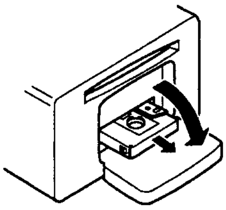



[31] (Remote controller)
Dir/
Band/
Disc

Ejecting a Cassette

Press the button [28] to open the display. The tape will eject automatically.
Remove the tape and close the display.


[28]
Tape Eject



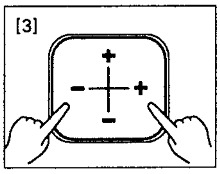
(Press the button again or push the cassette tape back in to load the tape automatically and close the display. Play will resume.)

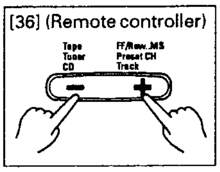
Note:
- *Leaving the display open may hinder safe driving. Keep the display closed under normal conditions.*

Convenient Function for Tape Playback

Using Fast Forward, Rewind, and Music Search

Main unit operation:
Operate using the button [3] leftwards and rightwards.
Remote control operation:
Operate using the button [36].
Each press of the respective side of the button [36] shifts the function as shown on the right.



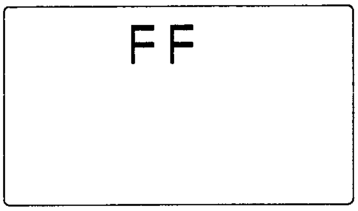

[36] (Remote controller)

Pressing + : Fast forward → Forward music search → End function → Fast forward

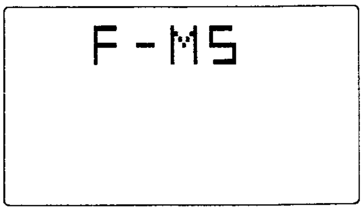
Pressing – : Rewind → Reverse music search → End function → Rewind

Display Indication for Each Function

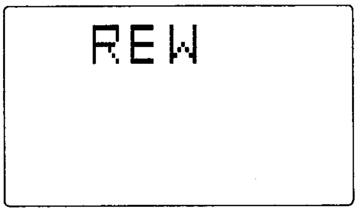
Fast forward



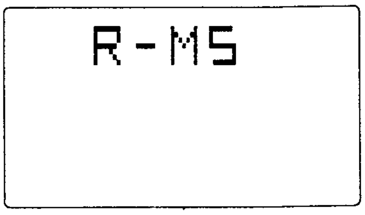
Forward music search



Rewind

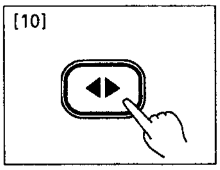


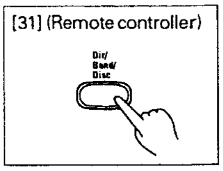
Reverse music search



- The right buttons may also be pressed to end fast forward, rewind, and music search.
- Music search may not function properly for the following types of recordings. This is due to the recording and is not a malfunction of the unit.
  —Recordings with a blank of less than 4 seconds between selections.
  —Recorded dialog with continuous pauses of 4 seconds or more.
  —Low-volume passages of 4 seconds or more.

Note:
- *Fast forward, rewind and music search will not function by the main unit operation when the unit is in either equalizer or fader-balance mode. Make sure these modes are OFF before using this function.*
  (For details, see "Selecting Equalizer/Fader-Balance Mode" on page 10.)



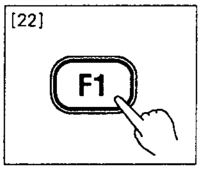

[31] (Remote controller)

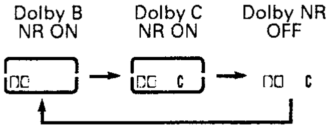
The Dolby B and C NR Systems

The Dolby B and C NR systems minimize the amount of noise produced during cassette playback. Cassettes recorded with the Dolby B NR system or the Dolby C NR system should be played on the deck with the respective Dolby NR system turned on.

Each press of the button [22], switches Dolby NR as shown on the right.

- Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
  "DOLBY" and the double-D symbol ▯▯ are trademarks of Dolby Laboratories Licensing Corporation.

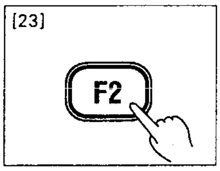


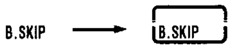

Dolby B NR ON
Dolby C NR ON
Dolby NR OFF
C
C

Using Blank Skip

You can use the blank skip function to record a blank of 12 seconds or more to ensure the efficient operation of the music search function.

Press the button [23] to switch to blank skip mode. (Press again to release.)



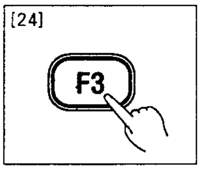

B.SKIP
B.SKIP

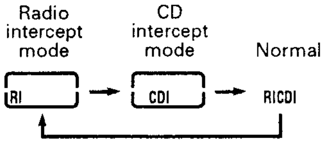
Using Radio/CD Intercept

The radio/CD intercept allows you to listen to the radio or CD while fast forwarding or rewinding a cassette.

Each press of the button [24], switches the function as shown on the right.

- Holding down the button for at least 2 seconds changes the unit to the remote control learn mode.
  (For details, see "Using the Learning Function on the Remote Controller" on page 9.)



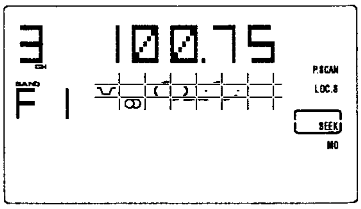

Radio intercept mode
CD intercept mode
Normal
RI
CDI
RICDI

Radio Intercept

The unit will automatically switch to radio while fast forwarding or rewinding.

- During radio intercept, radio is displayed. (See the pages on radio.)

During radio intercept


3
100.75
F
P.SCAN
LOC.S
SEEK
MO

CD Intercept

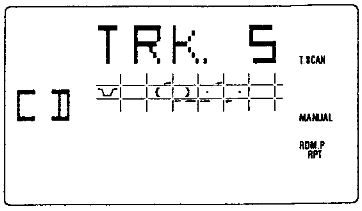
The unit will automatically switch to CD play while fast forwarding or rewinding.

- During CD intercept, CD is displayed. (See the pages on CD.)

Note:

- *The CD intercept will not function when a CD is not loaded into the unit. (When the separately available multi-play CD player is connected, the unit will switch to multi-play CD player if a magazine is loaded in the player.)*

During CD intercept



Note:

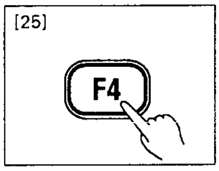
- *The radio/CD intercept will not function when music search or blank skip functions are in operation.*

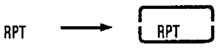
Using Music Repeat

The music repeat function allows you to listen to a selection as many times as you wish

Press the button [25] to switch to repeat mode.
Activate music repeat while the desired selection is being played.
(Press again to release.)

- Music repeat may not function properly for the following types of recordings. This is due to the recording and is not a malfunction of the unit.
  - —Recordings with a blank of less than 4 seconds between selections.
  - —Recorded dialog with continuous pauses of 4 seconds or more.
  - —Low-volume passages of 4 seconds or more.



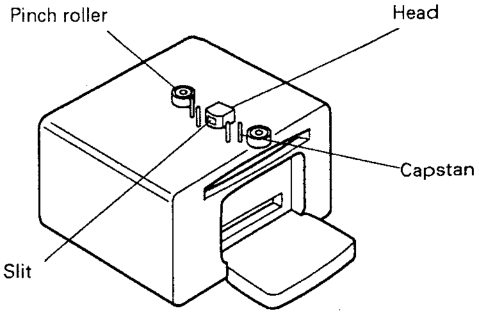


Head Cleaning

The playback head performs an important role in the reproduction of recordings. If the head should become dirty, tone quality suffers and skipping will occur. Therefore, the head should be cleaned periodically (one or twice a month). If a cotton swab is used, dip the swab into absolute alcohol or head cleaning fluid and use it to scrub the slit in the tape head.

Head Position

The head is located on the right side of the tape slot, approximately halfway between the front of the unit and the back.



Note:

- *Don't use metal or a magnet on the head. Never use tweezers or pliers wrapped with cotton or gauze. This can scratch the head.*
- *When using a cleaning tape, play it once on one side for normal cleaning. Too much use of the cleaning tape will increase head wear. Be sure to read the cleaning tape instructions before use.*

7. PLAYING COMPACT DISCS

Discs

- *Only use compact discs (optical digital audio discs) bearing the mark shown on the right. (Fig. 2)*

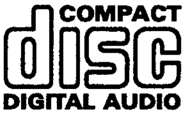


Fig. 2

- *The disc revolves at high speed within the player unit, so defective (cracked or badly bent) discs should not be used. (Fig. 3)(Fig. 4) ,*

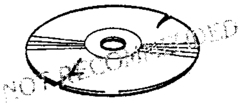


Fig. 3

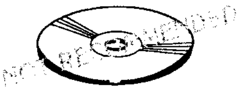


Fig. 4

Handling Compact Discs

- *Be sure never to touch the signal surface when handling discs. Pick up discs by grasping the outer edges or the edge of the hole and the outer edge. (Fig. 5)(Fig. 6)*

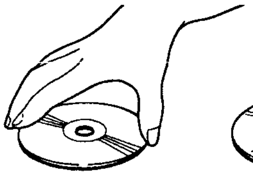


Fig. 5

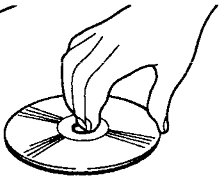


Fig. 6

- *Do not affix paper or tape, and avoid scratching the side of the disc which contains the label (contents of disc). (Fig. 7)*
- *Dust and/or finger smudges will have no direct effect on the signal recorded on the disc, but dirt can decrease the amount of light reflected from the recorded surface, thus affecting sound quality. If the disc should become soiled, gently wipe the surface with a soft lint-free cloth, wiping from the center of the disc to the edge. (Fig. 8)*
- *Do not use record sprays or antistatic agents. Such volatile chemicals as benzine and thinner can also damage the surface of the disc and should not be used. (Fig. 9)*
- *As with traditional audio records, compact discs are made of plastic. To avoid warping, keep the discs in their cases and do not store them in places exposed to direct sunlight. (Fig. 10)*

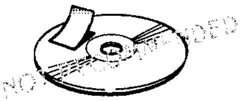


Fig. 7

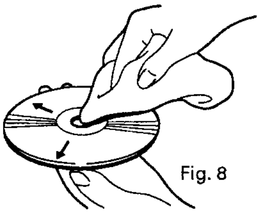


Fig. 8

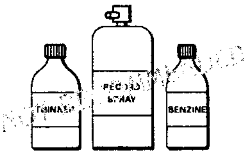


Fig. 9

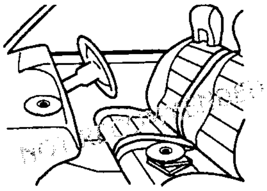


Fig. 10

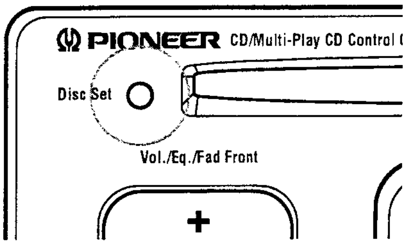
The Compact Disc Playing Environment

- *Driving over bumpy surfaces or cracks in the road may cause skipping.*
- *When the vehicle interior is very cold, turning on the car heater, and then the multi-play CD player immediately after, may cause frost to form on the disc or the player's internal optics (prism and lenses), thus resulting in abnormal sound reproduction. If the disc is frosted, wipe it with a soft cloth. If the internal optics are frosted, wait about an hour until the unit returns to normal condition.*

Listening to the CD with the Built-in CD Player

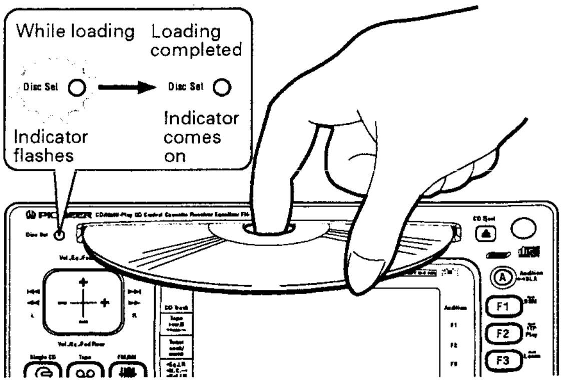
Loading a Disc

Before Loading a Disc:
- *A disc is already loaded if the indicator shown on the right is on. In this case, do not insert another disc as this may scratch the discs or cause a breakdown.*
- *Do not insert two stacked discs, as this may cause a breakdown.*
- *This unit can play 8 cm CD's without an adaptor. Do not use an adaptor when playing 8 cm CD's as the adaptor may become unplugged and the disk may not eject.*


PIONEER CD/Multi-Play CD Control
Disc Set
Vol./Eq./Fad Front
+

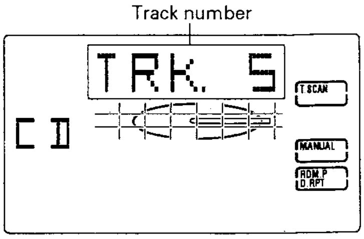
Insert the disc halfway.
The disc loads automatically and play begins.

- If you have mistakenly inserted the disc with the signal surface facing up, the disc will be automatically ejected.

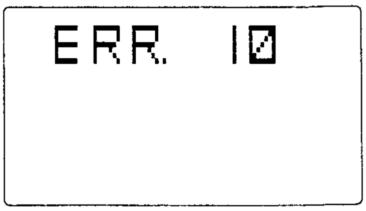

While loading
Loading completed
Disc Set
Disc Set
Indicator flashes
Indicator comes on
F1
F2
F3

Place the disc with the signal surface faced down.

When loading has been completed, the track number will be displayed in the message display component.


Track number
TRK. 5
CD
T SCAN
MANUAL
RDM P
D.RPT

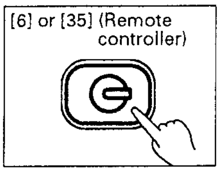
Note:
- *When the disc stops halfway, even though it is being inserted, or when play doesn't begin even though a disc is loaded, it may indicate an abnormality in the disc. Remove the disc and load another disc.*
  (For details, see "Ejecting a Disc" on page 32)
- *When an abnormality in the built-in CD player — such as "built-in CD player can not be operated" or "the music stops during CD playback" — has occurred, an error message will be indicated on the display. In this case, see to page 40, "Error Mode", and check the details of the error.*

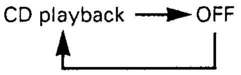


Turning Built-in CD Playback ON/OFF

When a disc is loaded, each press of the button [6] or [35] changes the built-in CD player as shown on the right.

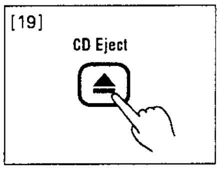
- This operation may be different when the separately available multi-play CD player is connected.
  (For details, see "Using the Multi-Play CD Function" on this page.)

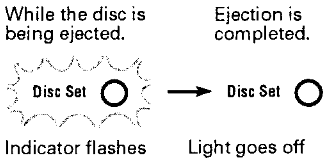

[6] or [35] (Remote controller)


CD playback
OFF

Ejecting a Disc

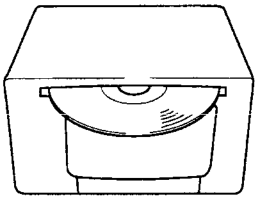
Press the button [19] to eject the disc.




While the disc is being ejected.
Ejection is completed.
Disc Set
Disc Set
Indicator flashes
Light goes off

Note:

- *Do not leave the disc in the state shown on the right for long periods. This will cause the disc to warp.*
  Also, do not drive with an 8cm CD left in this state. The disc may fall out from vibrations caused during driving.



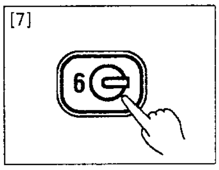
Playing the Multi-Play CD Player

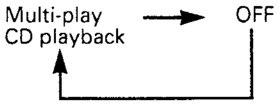
Using the Multi-Play CD Function

This unit can, in addition to playback on the built-in CD player, function as a controller for the separately available multi-play CD player.

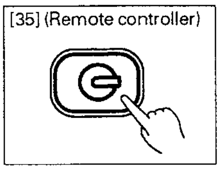
- See the owner's manual of the multi-play CD player for details on the loading and removal of magazines.

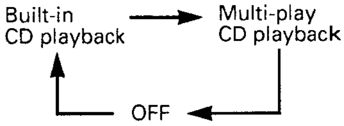
Main unit operation:
When a magazine is loaded in the multi-play CD player, each press of the button [7] changes the multi-play CD player as shown on the right.



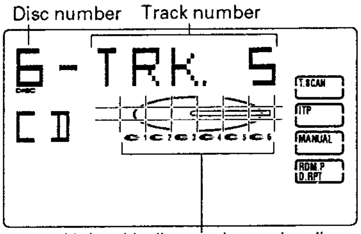

Multi-play CD playback
OFF

Remote control operation:
Pressing button [35] will change the function as shown on the right, when the CD is set for the built-in CD player and the magazine is set for the multi-play CD player. The function will not change when either the CD or the magazine are not set.


[35] (Remote controller)

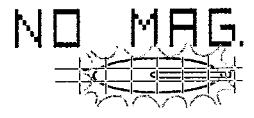

Built-in CD playback
Multi-play CD playback
OFF

When the unit changes to multi-play CD player, the disc number and the track number will be displayed in the message display component.

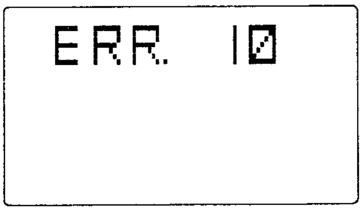


Lighted indicator shows the disc number within the magazine

Note:
- *After a magazine is loaded into the multi-play CD player, it takes about 10 or more seconds for CD play to begin. This is because the multi-play CD player is confirming whether or not there is a disc in the magazine. During this time, "LOADING" is indicated on the message display component.*
- *The unit will not switch OFF, even should the magazine be removed from the multi-play CD player during play. Be aware that maintaining this state for long periods may exhaust the car battery.*
- *When an abnormality in the multi-play CD player — such as the "CD player cannot be operated" or "the music stops during CD playback" — has occurred, an error message will be indicated on the display. In this case, see to page 40, "Error Mode", and check the details of the error.*



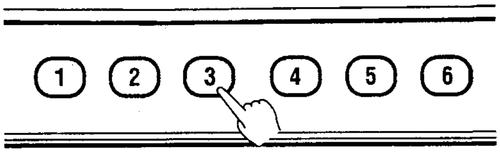
The light flashes when the magazine is removed.



Using Disc Number Search to Select a Disc

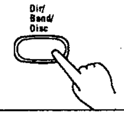
Main unit operation:
Press the button of the desired disc number.

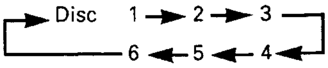
[13] — [18]



Remote control operation:
Each press of the button [31] advances the disc number by one.

[31] (Remote controller)





- The unit will not change to a specified disc number if the respective tray in the magazine is empty.
- It may take some time before disc play starts after pressing the button if the disc selection requires disc changing in the multi-play CD player.

Note:
- *Disc number search will not function by the main unit operation when the unit is in either equalizer or fader-balance mode. Make sure these modes are OFF before using this function.*
  (For details, see "Selecting Equalizer/Fader-Balance Mode" on page 10.)

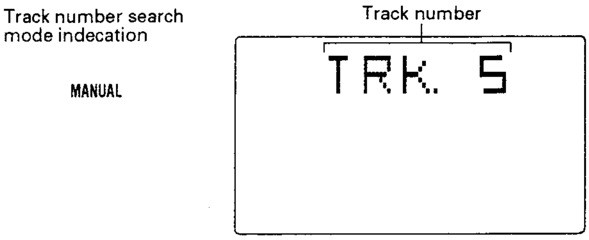
Convenient Functions for Disc Playback

- Common functions on the built-in CD player and the multi-play CD player.

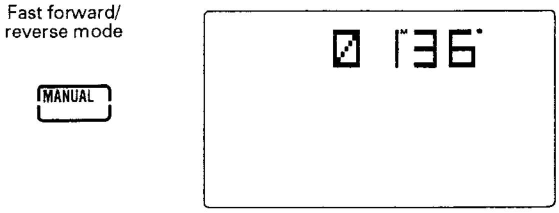
Using Track Number Search

1. Make sure that the track number search mode is ON.

Confirm that the track number is indicated on the display.

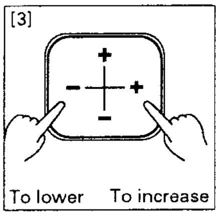

Track number search mode indecation
MANUAL
Track number
TRK. 5

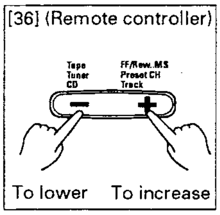
- The unit will switch to fast forward/reverse mode when the elapsed playing time is displayed, as shown on the right. Release fast forward/ reverse mode. See next section, "Using Fast Forward and Reverse" for details on releasing this mode.


Fast forward/ reverse mode
MANUAL
0 1'36

2. Specify the desired track number.

Main unit operation:
Operate using the button [3] leftwards and rightwards.
Remote control operation:
Operate using the button [36].
(Hold down the button to change at high speed.)


[3]
+
−
+
−
To lower
To increase


[36] (Remote controller)
Tape
Tuner
CD
FF/Rew.MS
Preset CH
Track
−
+
To lower
To increase

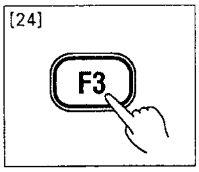
- When using the remote controller, track number search may be performed in fast forward and reverse mode also.

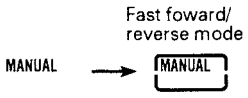
Note:
- *Track number search will not function by the main unit operation when the unit is in either equalizer or fader-balance mode. Make sure these modes are OFF before using this function.*
  (For details, see "Selecting Equalizer/Fader-Balance Mode" on page 10.)

Using Fast Forward and Reverse

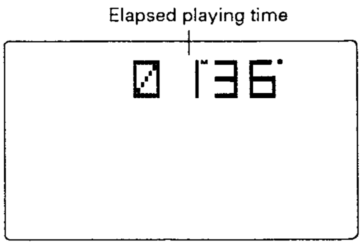
1. Specify the unit in fast forward/reverse mode.

Press the button [24] to switch the unit to fast forward/reverse mode.
(Press again to release.)




Fast foward/ reverse mode
MANUAL
MANUAL

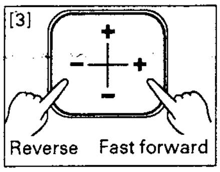
When the unit is in fast forward/reverse mode, the elapsed playing time is displayed.


Elapsed playing time
0 1'36

- Holding down the button for at least 2 seconds changes the unit to the remote control learn mode.
  (For details, see "Using the Learning Function on the Remote Controller" on page 9.)

2. Start fast forward or reverse.

Operate using the button [3] leftwards and rightwards.



- Playback can be heard while fast forwarding or reversing the disc.

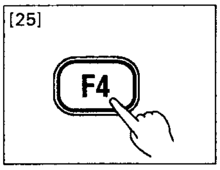
Note:
- *Fast forward/reverse will not function when the unit is in either equalizer or fader-balance mode. Make sure these modes are OFF before using this function. (For details, see "Selecting Equalizer/Fader-Balance Mode" on page 22.)*

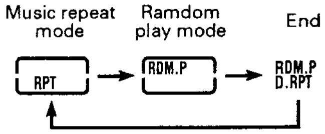
Using Disc Repeat*, Music Repeat and Random Play

* Exclusive multi-play CD palyer function

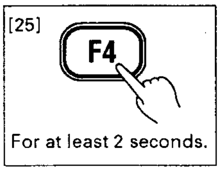
Apart from normal play, this unit can also operate music repeat (repeated playback of the same selection) and random play (playback of selections in a random order).
When the separately available multi-play CD player is connected, disc repeat playback (repeated playback of the same disc) is also possible in addition to music repeat and random play.

Each press of the button [25], changes the mode as shown on the right.

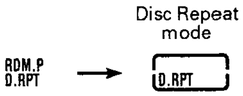




When playing the Multi-Play CD Player:
Holding down the button [25] for at least 2 seconds switches the unit to disc repeat mode.
(Press more than 2 seconds again to return the unit to normal playback.)



For at least 2 seconds.



Music Repeat

Music repeat allows you to listen to the same track as many times as you want.

Ramdom play

In the random play mode, the built-in microcomputer selects and plays tracks from the loaded CD (s) in random order.

- Since the order of track selection in random play depends on chance, the same track may be played two times in a row.
- Random play selects from all the tracks on all of the discs loaded in the magazine. If the main unit is used in conjunction with an older magazine-type car CD player (CDX-M100), tracks are randomly selected from the currently playing disc only.

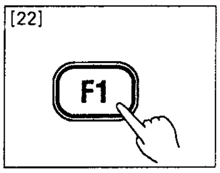
Disc Repeat*

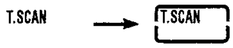
The disc repeat function causes the same disc to play repeatedly.

Using Highlight Scan Mode

Highlight scan allows you to scan the contents of a disc by playing back about 10 seconds of each track in sequential order.

1. The highlight scan mode is activated.

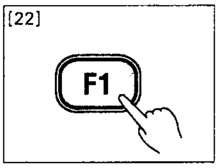




Press the button [22] to switch to highlight scan mode. All tracks on the disc are played for about 10 seconds each, starting from a point about one minute after the beginning.

- By holding the button down for at least 2 seconds, you can change the point where playback begins in each track. (See next section.)

2. Turn off highlight scan when the desired track begins playing.



Press again to release the mode.
The selection being played when highlight scan mode is released will continue to play.

- Highlight scan turns off after scanning through all the tracks and returning to the one in which it was first activated.

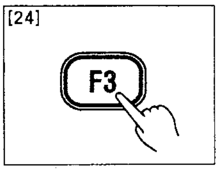
- Although the starting point for playback comes factory set at 1 minute after the beginning of each track, you can change this to any starting point of your choice. (See next section.)
- If the total playing time of a track is less than the specified starting point (e.g., if the starting point is set at 1 minute for a track with a playing time of less than 1 minute), the starting point changes to about 10 seconds after the start of the track.
- If the specified starting time is less than 10 seconds before the end of the track (e.g., if the starting point is set at 1 minute for a track with a playing time of 1 minute 1 second), playback will be as long as the remaining time of the track.

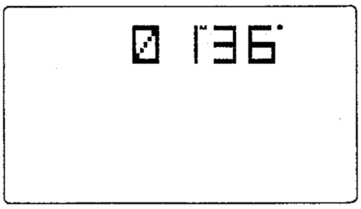
Note:

- *If the main unit is used in conjunction with older types of multi-play CD players (the CDX-M70 or CDX-M100), the starting point for highlight scan is set at the start of each track, and cannot be changed.*

Changing the Starting Point for Highlight Scan

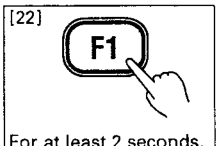
1. Specify fast forward/reverse mode.





Display elapsed playing time by specifying fast forward/reverse mode.
(Press again to release.)

2. Set the starting point.



For at least 2 seconds.

Carry out normal playback or fast forward/reverse operations, then hold down the button for at least 2 seconds at the point where you want highlight scan playback to begin (until the beep sounds).
After changing the starting point, the unit changes to highlight scan mode with the new starting point setting.

- Pressing the button for less than 2 seconds changes the unit to highlight scan mode. (See previous section.)

- The starting point is set in units of 10 seconds. Any fraction of 10 seconds is disregarded.
- Since the starting point is determined by the elapsed time after start of play, a starting point that exceeds a track's playing time cannot be set. To set a long starting point, perform the procedure using a track with a long playing time.

Using Program Play (Instant Track Programming (ITP))

Exclusive multi-play CD player function

With program play, you can program the playback sequence of desired tracks from all the tracks contained on the compact discs loaded in the magazine.

Before Using Program Play:

- Program play will not function for old types of multi-play CD players (CDX-M70 or CDX-M100).
- Up to 32 tracks (steps) can be programmed per magazine.
- Since programs are recorded for individual magazines, when a preprogrammed magazine is loaded, its program is retrieved from memory and play is performed according to the programmed sequence.
- Magazine identification is performed according to the compact disc in tray 1 of a magazine. Tray 1 should therefore always be loaded. Although a program can be created even when tray 1 is empty, the program is erased when the magazine is removed.
- Up to 16 magazines can be programmed. If you program more than 16, the oldest programs will be deleted in sequence and replaced with the new ones.

Programming Procedure

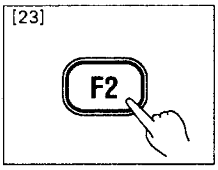
1. Play the track to be programmed.

Use the disc number search and track number search to select the desired selection.
(For details, see "Using Disc Number Search to Select a Disc" on page 33 and "Using Track Number Search" on page 34.)

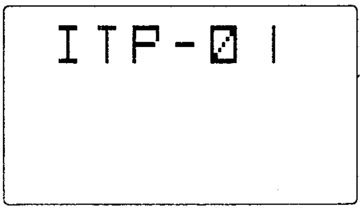
2. Record the first step (track).

Press the button [23] to record selection being played as selection 1 in the program.
The program sequence is indicated in the message display component.

- Take care not to press this button by accident since it will cause the program to be recorded.
- Holding down the button for at least 2 seconds causes the program to play.
(For details, see "Playing Back a Program" on page 38.)



Programing indication shown for about 3 seconds.



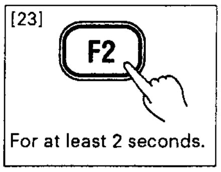
3. Record the remainder of the desired tracks.

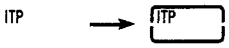
Repeat steps 1 and 2.

- If the memory contains a number of tracks, the new selection is added to the next step.
- Programming is possible even when the multi-play CD player is in highlight scan, music repeat, or random play mode.
- Up to 32 steps can be recorded. If recording of a 33rd step is attempted, "FULL" appears on the display for about 3 seconds to indicate further recording is not possible.

Playing Back a Program

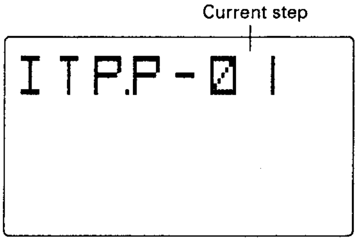
Holding down the button [23] for at least 2 seconds begins playback of the program.
(Press again to release.)


[23]
F2
For at least 2 seconds.



While the program is being played, the sequence of the selections played is displayed in the message display component.

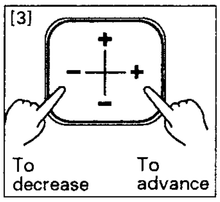
- Holding down the button for less than 2 seconds switches the unit to the programming mode.
  (For details, see "Programming Procedure" on page 37.)
- When program paly is activated, all tracks are played in the programmed sequence. When the last step finishes, the program returns to the first step and begins playing again.
- When you attempt to play the program in a magazine with no program recorded, "EMPTY" will be scrolled across the message display component to inform you that it is not possible to play a program.

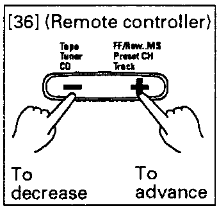

Current step
ITP.P-01

Searching for a Step Number (Step Number Serarch)

Recall the selection in the sequence stored in the program's memory.

Main unit operation:
Operate using the button [3] leftwards and rightwards.
Remote control operation:
Operate using the button [36].


[3]
+
-
+
-
To decrease
To advance

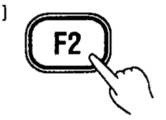

[36] (Remote controller)
Tape
Tuner
CD
FF/Rew.MS
Preset CH
Track
To decrease
To advance

> **Note:**
> - *Step number search will not function by the main unit operation when the unit is in either equalizer or fader-balance mode. Make sure these modes are OFF before using this function.*
>   *(For details, see "Selecting Equalizer/Fader-Balance Mode" on page 10.)*

Erasing a Single Selection from a Program

1. **Play the program.**
   Hold down the button [23] for at least 2 seconds.
   (For details, see "Playing Back a Program" on page 38.)

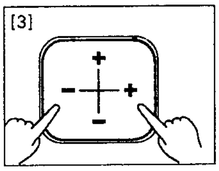
[23]



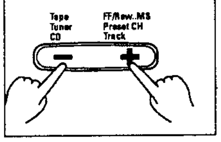
For at least 2 seconds.

2. **Find the track to be erased and play it.**
   Search for a step number using the step number search. (For details, see "Searching for a Step Number" on page 38.)

[3]

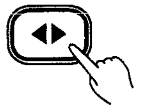


[36] (Remote controller)



3. **Erase the track.**
   Hold down the button [10] for at least 2 seconds (until a beep sounds).
   - After the selection is erased, all following selections move up one place in the program sequence.

[10]

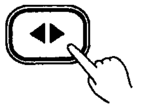


For at least 2 seconds.

Erasing an Entire Program

During normal play, hold down the button [10] for at least 2 seconds (until a beep sounds).
The program recorded for the magazine currently playing is erased. "CLEAR" will scroll across the message display component.

[10]

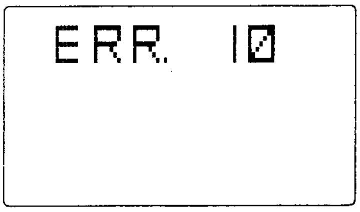


For at least 2 seconds.

Note:
- *Erasing a program is not possible during the highlight scan, music repeat, or random play modes. Turn these modes OFF and begin normal CD play before erasing a program.*
  (For details, see "Using Highlight Scan Mode" on page 36 and "Using Disc Repeat, Music Repeat and Random Play" on page 35.)

Error Mode

Should an abnormality occur — for example, the built-in CD player or multi-play CD player cannot be operated, or the music stops during CD playback — the main unit will indicate an error mode.
While it the unit is in error mode, a number will be displayed indicating the cause of the error, so please check the items listed below. If you cannot fix the problem after checking the cause of the error, please contact your dealer or your nearest Pioneer service center.



Note:
- *When using the multi-play CD player, CDX-M100, CDX-M70, CDX-M50 and CDX-M40, an error will be displayed only in the form of "ERR.00", without the number which indicated the cause of the error. When this display appears, please check items 11, 12, 14, or 30 listed below.*

Display	Cause	Treatment
11,12	Dirt or a scratch on the disc stops the laser beam from being able to focus.	Wipe the dirt off the disc. Exchange the disc if it is scratched.
	The disc has been inserted upside down.	Confirm that the disc has been inserted right side up.
14	The disc has been inserted upside down.	Confirm that the disc has been inserted right side up.
	An unrecorded compact disc (CD-R), can be recorded on once is being used.	When you use a CD-R, load one that has been recorded on.
30	Dirt or a scratch on the disc hinders the track number search function.	Wipe the dirt off the disc. Exchange the disc if it is scratched.
80	An empty magazine is loaded in the multi-play CD player.	Insert a disc in the magazine.
10, 12, 50, 60, 70, A0	Electrical or mechanical system fault.	Turn the car ignition switch OFF, then ON again, or change to other sources except CD playback, and then to CD playback again. If the error indication does not disappear, contact your dealer or your nearest Pioneer service station.

- When error numbers not mentioned above are indicated, refer to the owner's manual accompanying the multi play CD player.

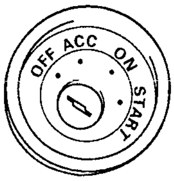
HEAT Indicator

To prevent deterioration in the semi-conductor laser from overheating, playback of a CD will stop when the temperature surrounding the main unit and the multi-play CD player rise during play.
When this occurs, "HEAT" will be indicated on the display.
Please wait until the temperature drops.
- This function refers to the CD player component of the main unit and to the multi-play CD player CDX-M100. It does not refer to other multi-play CD players.

8. CONNECTING THE UNITS

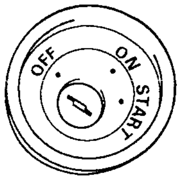
Before Connecting the Unit:

- *To avoid shorts in the electrical system, be sure to disconnect the battery ⊖ cable before beginning installation.*
- *Before making final connections, make temporary connections then operate the unit to check for any connecting cord problems.*
- *Refer to the owner's manual for details on connecting the various cords of the power amp and other units, then make connections correctly.*
- *When replacing fuses, be sure to use only fuses of the rating prescribed on the fuse holder.*
- *Be sure to connect the memory power supply lead (orange) to a terminal that is always supplied with power regardless of the vehicle's ignition switch position. If this connection is made incorrectly or is forgotten, the unit will not work at all.*
- *Don't pass the orange lead through a hole into the engine compartment to connect to the battery. This will damage the lead insulation and cause a very dangerous short.*
- *Since a unique BPTL circuit is employed, never wire so the speaker leads are directly grounded or the left and right speaker ⊖ leads are common.*
- *Speakers connected to this unit must be high-power types possessing minimum rating of 30 W and impedance of 4 to 8 ohms. Connecting speakers with output and/or impedance values other than those noted here can damage the speakers.*
- *When the power amp is being linked with this system, be sure not to connect the blue lead to the amp's power terminal. Likewise, when linking this system with the auto-antenna, do not connect to power terminal for the antenna. Such connection can make overcurrent cause malfunctions.*
- *When the unit is mounted in a vehicle whose ignition switch does not have the ACC (accessory) position as shown in Fig.12, be sure to connect the red lead of the unit to the terminal controlled by the ignition switch ON/OFF position. If you do not, the vehicle battery may go flat when you leave your vehicle for several hours.*



ACC position

Fig. 11



No ACC position

Fig. 12

Upon Completion of Wiring

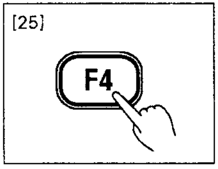
Press the Clear Button

After wiring has been completed, use a sharp point such as a pencil tip to press the clear button on the main unit and the multi-play CD player.

Starting the Self-Demonstration

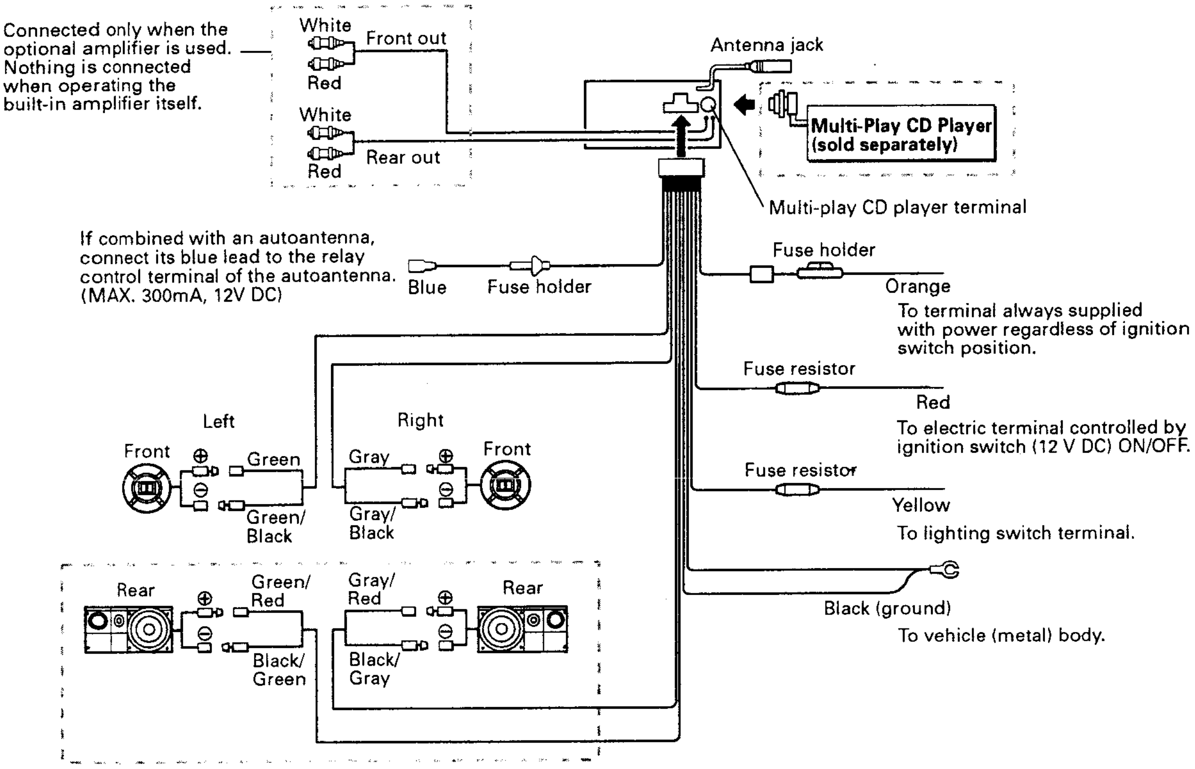
After wiring has been completed, the self-demonstration function of this unit will begin when the vehicle's ignition switch turns ON or ACC position.

Turning the unit OFF begins the self-demonstration function automatically. Pressing the button [25] turns it off.
(Press again to turn on.)
(For details, see "Using the Self-Demonstration Function" on page 8.)



Connection Diagram

Example 1: 4-speaker system with built-in amplifier



Connected only when the optional amplifier is used. Nothing is connected when operating the built-in amplifier itself.

If combined with an autoantenna, connect its blue lead to the relay control terminal of the autoantenna. (MAX. 300mA, 12V DC)

Orange: To terminal always supplied with power regardless of ignition switch position.

Red: To electric terminal controlled by ignition switch (12 V DC) ON/OFF.

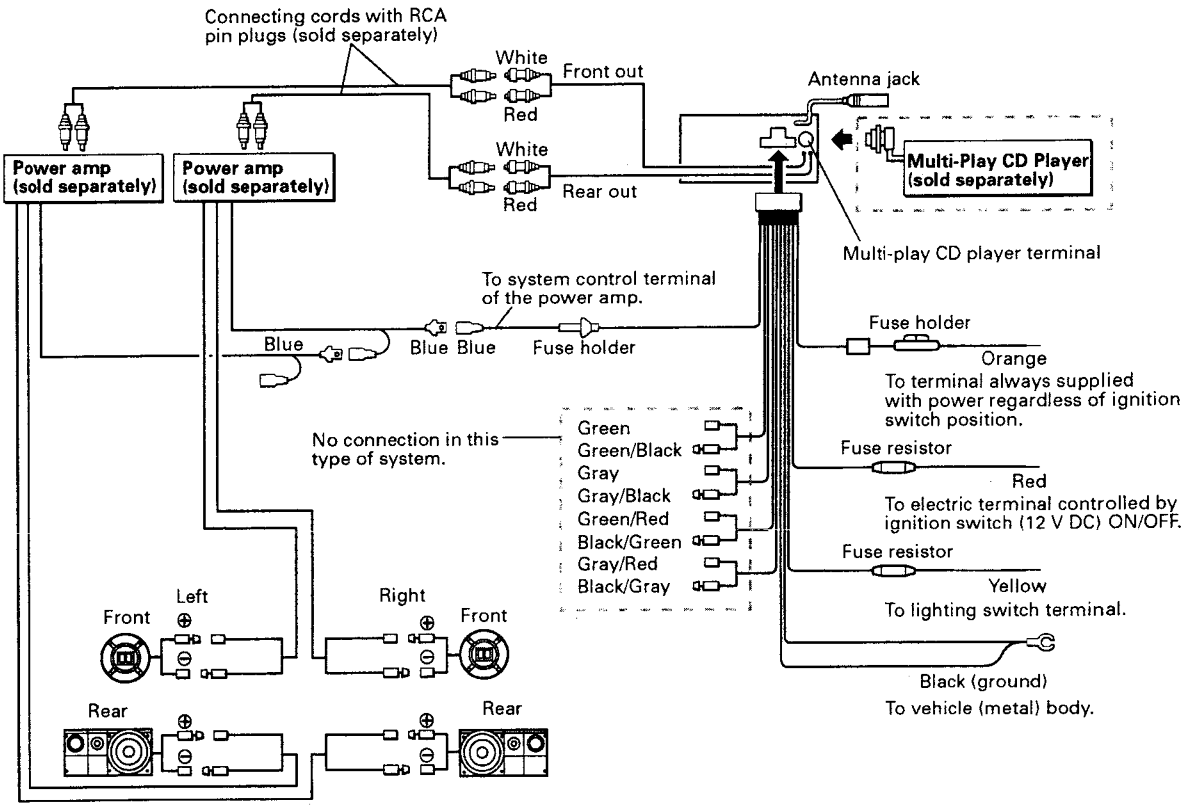
Yellow: To lighting switch terminal.

Black (ground): To vehicle (metal) body.

Not connected to anything for 2-speaker system.

White
Front out
Red
White
Rear out
Red
Antenna jack
Multi-Play CD Player (sold separately)
Multi-play CD player terminal
Blue
Fuse holder
Fuse holder
Orange
Fuse resistor
Red
Fuse resistor
Yellow
Black (ground)
Left
Right
Front
Front
Green
Green/ Black
Gray
Gray/ Black
Rear
Rear
Green/ Red
Black/ Green
Gray/ Red
Black/ Gray
⊕
⊖

Example 2: 4-speaker system with optional amplifier


Connecting cords with RCA pin plugs (sold separately)
White
Front out
Red
White
Rear out
Red
Power amp (sold separately)
Power amp (sold separately)
Antenna jack
Multi-Play CD Player (sold separately)
Multi-play CD player terminal
To system control terminal of the power amp.
Blue
Blue Blue
Fuse holder
Fuse holder
Orange
To terminal always supplied with power regardless of ignition switch position.
No connection in this type of system.
Green
Green/Black
Gray
Gray/Black
Green/Red
Black/Green
Gray/Red
Black/Gray
Fuse resistor
Red
To electric terminal controlled by ignition switch (12 V DC) ON/OFF.
Fuse resistor
Yellow
To lighting switch terminal.
Left
Front
Right
Front
Rear
Rear
Black (ground)
To vehicle (metal) body.

- **FH-M70/ES**

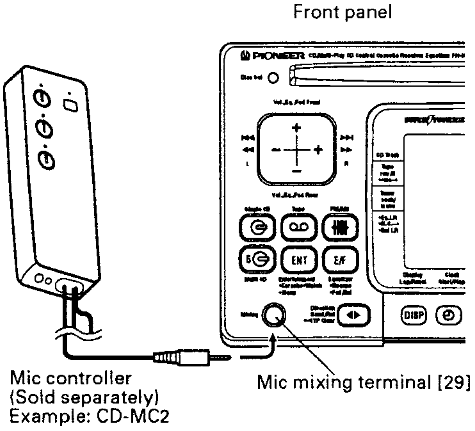
When Using the Unit as a Karaoke System

When combined with the separately available Mic controller (e.g., CD-MC2), this unit can be used as a karaoke system.

When combining a Mic controller to this unit, connect the mike mixing plug of the Mic controller to the mike mixing terminal of the unit's front panel.

Note:

- *Although a commercially available mike is connected directly to the mike mixing terminal, the sound is not output through the mike (the mixing function will not work).*
  When using this unit as a karaoke system, be sure to combine the unit with the separately available Mic controller (e.g., CD-MC2).


Front panel
Mic controller
(Sold separately)
Example: CD-MC2
Mic mixing terminal [29]

9. SPECIFICATIONS

• FH-M75/UC

General

Power source .... 14.4 V DC (10.8 — 15.6 V allowable)
Grounding system .... Negative type
Max. current consumption .... 7.0 A
Dimensions (chassis) .... 178(W) × 100(H) × 155(D) mm
[7(W) × 4(H) × 6-1/8(D) in.]
(nose) .... 176(W) × 96(H) × 12(D) mm
[6-7/8(W) × 3-7/8(H) × 1/2(D) in.]
Weight .... 2.7 kg (5.9 lbs)

Amplifier

Continuous power output is 15 W per channel min. into 4Ω, both channels driven 50 to 15,000 Hz with no more than 5% THD.

Max. power output .... 30 W × 4 (EIAJ)
Load impedance .... 4Ω (4 — 8Ω allowable)
Nominal output level/
output impedance (pre out) .... 500 mV/1 kΩ
Equalization frequency .... 60 Hz, 125 Hz, 250 Hz,
500 Hz, 1 kHz, 3.5 kHz, 10 kHz
Equalization range .... ±12 dB
Loudness contour .... +10 dB (100 Hz), +6.5 dB (10 kHz)
(volume: -30 dB)

CD player

System .... Compact disc audio system
Usable discs .... Compact disc
Signal format .... Sampling frequency: 44.1 kHz
Number of quantization bits: 16; linear
Frequency characteristics .... 5 — 20,000 Hz (±1 dB)
Signal-to-noise ratio .... 94 dB (1 kHz) (IHF-A network)
Dynamic range .... 90 dB (1 kHz)
Number of channels .... 2 (stereo)

Tape player

Tape .... Compact cassette tape (C-30 — C-90)
Tape speed .... 4.76cm/sec. (+0.14cm/sec.,-0.05cm/sec.)
Fast forward/rewind time .... Approx. 100 sec. for C-60
Wow & flutter .... 0.09% (WRMS)
Frequency response .... Metal: 30 — 22,000 Hz (±3 dB)
Stereo separation .... 50 dB
Signal-to-noise ratio
.... Metal: Dolby C NR IN: 73 dB (IHF-A network)
Dolby B NR IN: 67 dB (IHF-A network)
Dolby NR OUT: 61 dB (IHF-A network)

FM tuner

Frequency range .... 87.9 — 107.9 MHz
Usable sensitivity .... 8 dBf
(0.7µV/75Ω, mono, S/N: 30 dB)
50 dB quieting sensitivity .... 13 dBf
(1.2 µV/75Ω, mono)
Signal-to-noise ratio .... 70 dB (IHF-A network)
Distortion .... 0.3% (at 65 dBf, 1 kHz, stereo)
Frequency response .... 30 — 15,000 Hz (±3 dB)
Stereo separation .... 40 dB (at 65 dBf, 1 kHz)
Selectivity .... 70 dB (2ACA) (±400 kHz)
Three-signal intermodulation (desire signal level)
.... 35 dBf (two undesire signal level: 110 dBf)

AM tuner

Frequency range .... 530 — 1,710 kHz
Usable sensitivity .... 18µV (25 dB) (S/N: 20 dB)
Selectivity .... 50 dB (±10 kHz)

These specifications were determined and are presented in accordance with specification standards established by the Ad Hoc Committee of Car Stereo Manufacturers.

Note:
Specifications and the design are subject to possible modification without notice due to improvements.

• FH-M70/ES

General

Power source .... 14.4 V DC (10.8 — 15.6 V allowable)
Grounding system .... Negative type
Max. current consumption .... 7.0 A
Dimensions (chassis) .... 178(W) × 100(H) × 155(D) mm
(nose) .... 176(W) × 96(H) × 12(D) mm
Weight .... 2.7 kg

Amplifier

Continuous power output is 15 W per channel min. into 4Ω, both channels driven 50 to 15,000 Hz with no more than 5% THD.

Max. power output .... 30 W × 4 (EIAJ)
Continuous power output ..... 14 W × 4 (1% dist. at 1 kHz)
Load impedance .... 4Ω (4 — 8Ω allowable)
Nominal output level/
output impedance (pre out) .... 500 mV/1 kΩ
Equalization frequency .... 60 Hz, 125 Hz, 250 Hz,
500 Hz, 1 kHz, 3.5 kHz, 10 kHz
Equalization range .... ±12 dB
Loudness contour .... +10 dB (100 Hz), +6.5 dB (10 kHz)
(volume: -30 dB)

CD player

System .... Compact disc audio system
Usable discs .... Compact disc
Signal format .... Sampling frequency: 44.1 kHz
Number of quantization bits: 16; linear
Frequency characteristics .... 5 — 20,000 Hz (±1 dB)
Signal-to-noise ratio .... 94 dB (1 kHz) (IEC-A network)
Dynamic range .... 90 dB (1 kHz)
Number of channels .... 2 (stereo)

Tape player

Tape .... Compact cassette tape (C-30 — C-90)
Tape speed .... 4.76cm/sec. (+0.14cm/sec.,-0.05cm/sec.)
Fast forward/rewind time .... Approx. 100 sec. for C-60
Wow & flutter .... 0.09% (WRMS)
Frequency response .... Metal: 30 — 22,000 Hz (±3 dB)
Stereo separation .... 50 dB
Signal-to-noise ratio
.... Metal: Dolby C NR IN: 73 dB (IEC-A network)
Dolby B NR IN: 67 dB (IEC-A network)
Dolby NR OUT: 61 dB (IEC-A network)

FM tuner

Frequency range .... 87.5 — 108 MHz
Usable sensitivity .... 8 dBf
(0.7µV/75Ω, mono, S/N: 30 dB)
50 dB quieting sensitivity .... 13 dBf
(1.2 µV/75Ω, mono)
Signal-to-noise ratio .... 70 dB (IEC-A network)
Distortion .... 0.3% (at 65 dBf, 1 kHz, stereo)
Frequency response .... 30 — 15,000 Hz (±3 dB)
Stereo separation .... 40 dB (at 65 dBf, 1 kHz)

AM tuner

Frequency range .... 531 — 1,602 kHz (9 kHz)
530 — 1,710 kHz (10 kHz)
Usable sensitivity .... 18µV (25 dB) (S/N: 20 dB)
Selectivity .... 50 dB (±9 kHz)
50 dB (±10 kHz)

Note:
Specifications and the design are subject to possible modification without notice due to improvements.

10. DISASSEMBLY

●Removing the Case

1. Insert and turn a flat screwdriver to remove the case.
2. Raise the case to remove.

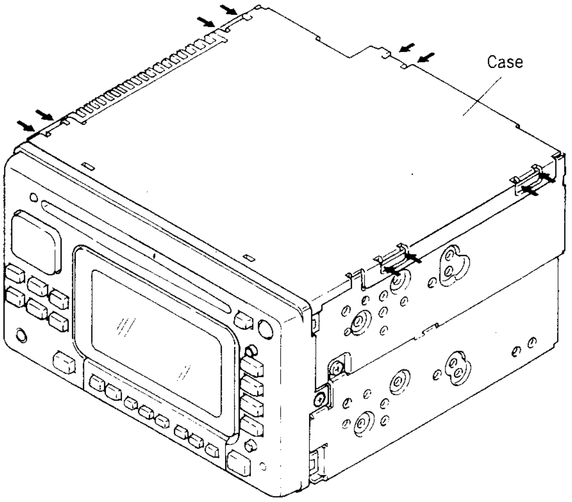


Fig. 13

●Removing the Grille Assy

1. Remove the two screws A and three screws B.
2. Disconnect the four connectors.
3. Press the two tabs,and then pull out the grille assy.

NOTE:

When reassembling the grille assy, use a pair of tweezers of the like to keep holding the flexible P.C. Board so that it will enter under the cassette mechanism assy.

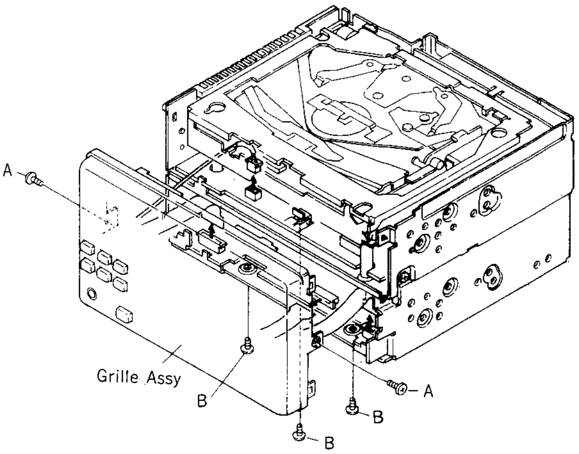


Fig. 14

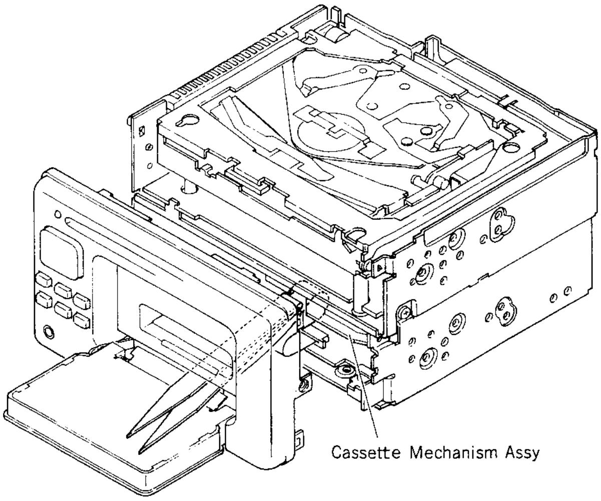


Fig. 15

●Removing the Operation Flap

1.Remove the spring and washer.
2.Remove the four screws.
3.Remove the operation flap.

NOTE:

Use utmost care to mount the spring while assembling the operation flap unit.

**Operation flap = Open and close display*

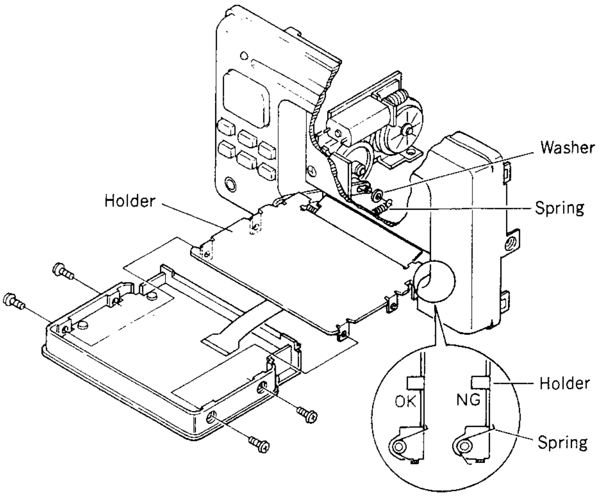

Washer
Holder
Spring
OK
NG
Holder
Spring

Fig. 16

●Removing the Drive Assy

1.Remove the two screws.
2.Remove the drive assy.

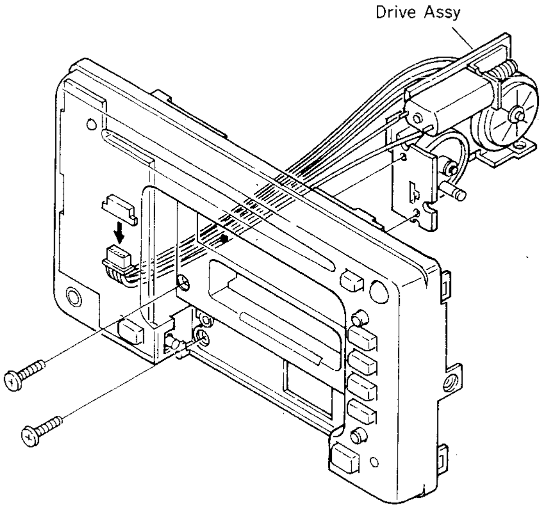


Fig. 17

●Removing the CD Mechanism Module

1.Remove the four screws.
2.Disconnect the connector.
3.Remove the CD mechanism module.

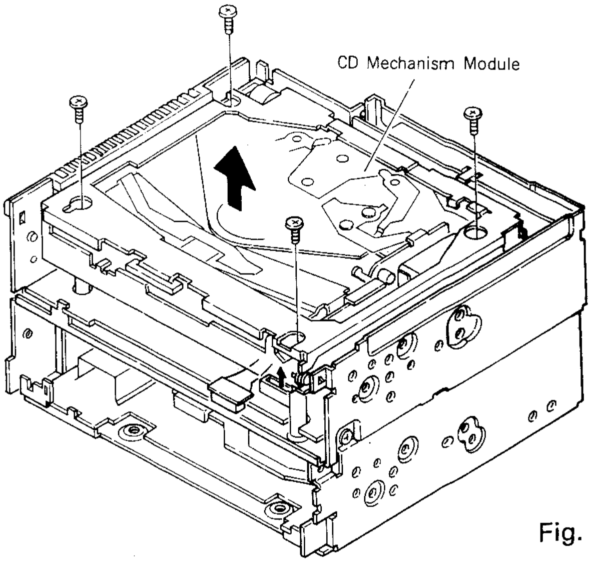

CD Mechanism Module

Fig. 18

●Removing the Tuner Amp Assy and Heat Sink

1. Disconnect the two connectors.
2. Remove the two screws A, three screws B, three screws C and two screws D.
3. Remove the tuner amp assy and heat sink.

Screw A and B is to fix both tuner amp assy and heat sink, Screw B to clamp both tuner amp assy and deck control assy, and Screw D to secure both deck control assy and heat sink.

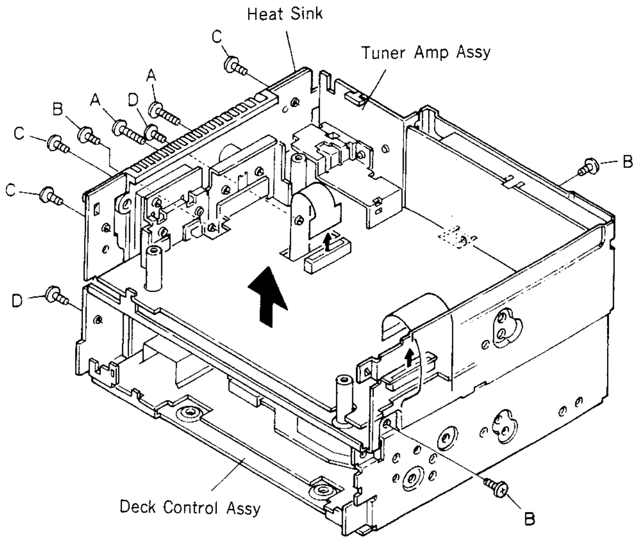

Heat Sink
Tuner Amp Assy
C
A
B
A
D
C
C
D
B
Deck Control Assy
B

Fig. 19

●Removing the Amp P.C.Board

1. Remove the two screws.
2. Unbend the tabs at three locations indicated by arrows until straight.
3. Raise up on amp P.C.Board to remove it from chassis unit.

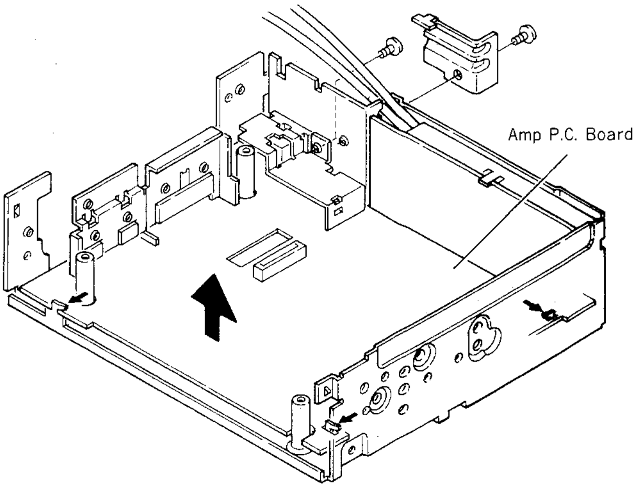

Amp P.C. Board

Fig. 20

●Removing the Cassette Mechanism Assy

1. Remove the four screws.
2. Disconnect the connector.
3. Remove the cassette mechanism assy.

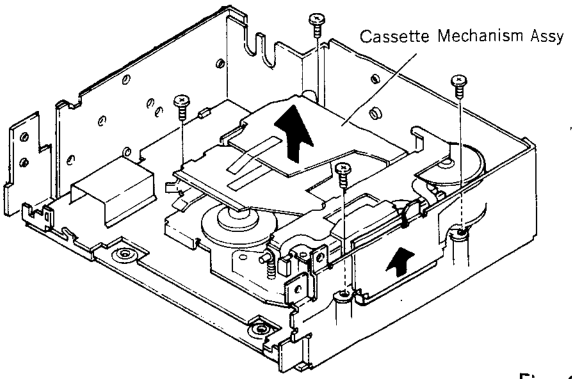

Cassette Mechanism Assy

Fig. 21

●Removing the Deck Control Unit

1. Remove the screw.
2. Unbend the tabs at three locations indicated by arrows until straight.
3. Raise up on deck control unit to remove it from chassis unit.

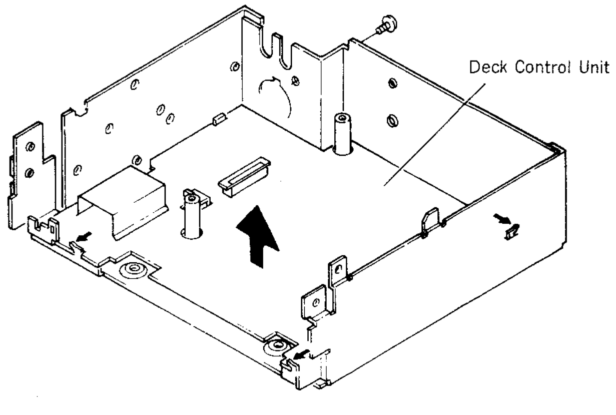

Deck Control Unit
Chassis Unit

Fig. 22

11. ADJUSTMENT

1)Precautions

- This unit uses a single power supply (+5V) for the regulator. The signal reference potential,therefore,is connected to REFOUT(approx. 2.5V) instead of GND.

  If REFOUT and GND are connected to each other by mistake during adjustments,not only will it be impossible to measure the potential correctly,but the servo will malfunction and a severe shock will be applied to the pick-up. To avoid this,take special note of the following.

  Do not connect the negative probe of the measuring equipment to REFOUT and GND together. It is especially important not to connect the channel 1 negative probe of the oscilloscope to REFOUT with the channel 2 negative probe connected to GND.

  And since the frame of the measuring instrument is usually at the same potential as the negative probe,change the frame of the measuring instrument to floating status.

  If by accident REFOUT comes in contact with GND,immediately switch the regulator or power OFF.
- Always make sure the regulator is OFF when connecting and disconnecting the various filters and wiring required for measurements.
- Before proceeding to further adjustments and measurements after switching regulator ON,let the player run for about one minute to allow the circuits to stabilize.
- Since the protective systems in the unit's software are rendered inoperative in test mode,be very careful to avoid mechanical and /or electrical shocks to the system when making adjustment.
- Test mode starting procedure

  Switch ACC,back-up ON while pressing the 4 and 6 keys together.
- Test mode cancellation

  Switch ACC,back-up OFF.
- Disc detection during loading and eject operations is performed by means of a photo transistor in this unit.Consequently,if the inside of the unit is exposed to a strong light source when the outer casing is removed for repairs or adjustment,the following malfunctions may occur.

  *During PLAY, even if the eject button is pressed,the disc will not be ejected and the unit will remain in the PLAY mode.

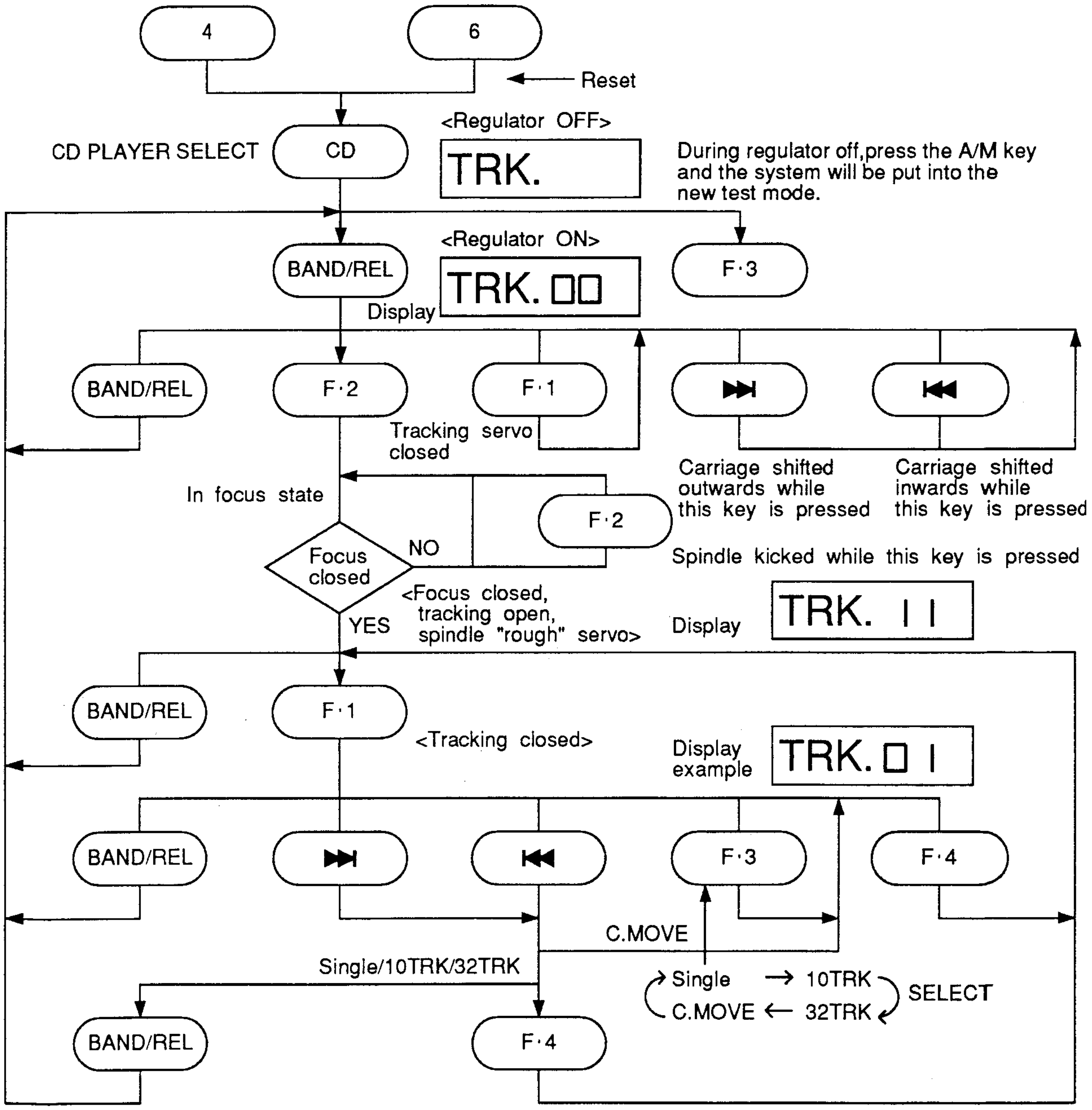
  *The unit will not load a disc.

  When the unit malfunctions this way,either reposition the light source,move the unit or cover the photo transistor.
- When loading and unloading discs during adjustment procedures,always wait for the disc to be properly clamped or ejected before pressing the another key. Otherwise, there is risk of the actuator being destroyed.
- Turn power off when pressing the button ⏭ or the button ⏮ key for focus search in the test mode. (Or else lens may stick and the actuator may be damaged.)

Key	Function
BAND/REL	RegulatorON/OFF
⏭	FWD Kick
⏮	REV Kick
EJECT	EJECT
F•3	Jump mode
F•1	Tracking close
F•4	Tracking open
F•2	Focus close
CD	CD ON/OFF

- SINGLE/10TRK/32TRK will continue to operate even after the key is released.Tracking closed the moment C-MOVE is released.
- JUMP MODE resets to SINGLE as soon as power is off.

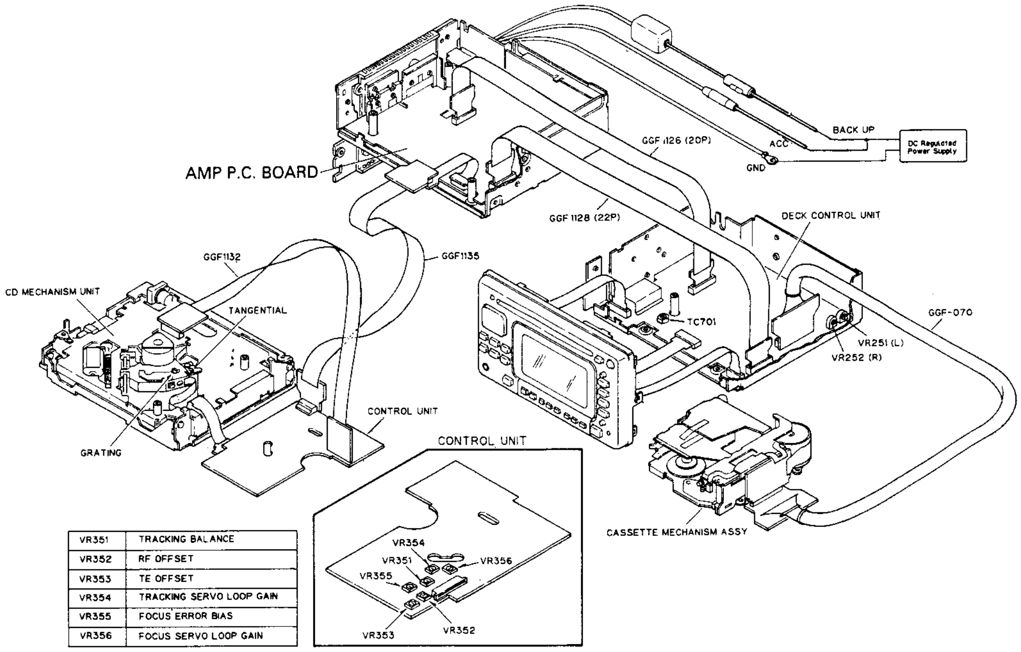
● Flow Chart


4
6
Reset
CD PLAYER SELECT
CD
<Regulator OFF>
TRK.
During regulator off,press the A/M key and the system will be put into the new test mode.
<Regulator ON>
BAND/REL
TRK. 00
Display
F·3
BAND/REL
F·2
F·1
⏭
⏮
Tracking servo closed
Carriage shifted outwards while this key is pressed
Carriage shifted inwards while this key is pressed
In focus state
F·2
Focus closed
NO
YES
<Focus closed, tracking open, spindle "rough" servo>
Spindle kicked while this key is pressed
Display
TRK. 11
BAND/REL
F·1
<Tracking closed>
Display example
TRK. 01
BAND/REL
⏭
⏮
F·3
F·4
C.MOVE
Single/10TRK/32TRK
Single → 10TRK
C.MOVE ← 32TRK
SELECT
BAND/REL
F·4

● Measuring Equipment and Jigs

Adjustment	Measuring equipment&jigs
Grating Adjustment	Oscilloscope,clock driver,grating adjustment filter (bandpass filter)(GGF133),AC millivoltmeter SONY TYPE 4 (or TYPE 3) Extension Cable:GGF1132,GGF1135 GGF1128 GGF1126 GGF-070
Tangential Skew Check	Oscilloscope,screwdriver SONY TYPE 4 (or TYPE 3) Extension Cable:GGF1132,GGF1135 GGF1128 GGF1126 GGF-070
Grating Adjustment	Oscilloscope,clock driver,two low-pass filters SONY TYPE 4 (or TYPE 3) Extension Cable:GGF1132,GGF1135 GGF1128 GGF1126 GGF-070
FE Bias Adjustment	Oscilloscope SONY TYPE 4 (or TYPE 3) Extension Cable:GGF1132,GGF1135 GGF1128 GGF1126 GGF-070
RF Offset Adjustment	Oscilloscope SONY TYPE 4 (or TYPE 3) Extension Cable:GGF1132,GGF1135 GGF1128 GGF1126 GGF-070
TE Offset Adjustment-1	DC voltmeter Extension Cable:GGF1132,GGF1135 GGF1128 GGF1126 GGF-070
Tracking Balance Adjustment-1	Oscilloscope SONY TYPE 4 (or TYPE 3) Extension Cable:GGF1132,GGF1135 GGF1128 GGF1126 GGF-070
Focus Servo Loop Gain Adjustment	Oscillator,gain adjustment filter (GGF-065), dual meter milli-voltmeter SONY TYPE 4 (or TYPE 3) Extension Cable:GGF1132,GGF1135 GGF1128 GGF1126 GGF-070
Tracking Servo Loop Gain Adjustment	Oscillator,gain adjustment filter (GGF-065), dual meter milli-voltmeter SONY TYPE 4 (or TYPE 3) Extension Cable:GGF1132,GGF1135 GGF1128 GGF1126 GGF-070
TE Offset Adjustment-2	DC voltmeter Extension Cable:GGF1132,GGF1135 GGF1128 GGF1126 GGF-070
Tracking Balance Adjustment-2	Oscilloscope SONY TYPE 4 (or TYPE 3) Extension Cable:GGF1132,GGF1135 GGF1128 GGF1126 GGF-070

● Adjustment Point


AMP P.C. BOARD
GGF 1126 (20P)
GGF 1128 (22P)
BACK UP
ACC
GND
DC Regulated Power Supply
DECK CONTROL UNIT
GGF1132
GGF1135
CD MECHANISM UNIT
TANGENTIAL
TC701
GGF-070
VR251 (L)
VR252 (R)
CONTROL UNIT
GRATING
CASSETTE MECHANISM ASSY
VR354
VR351
VR356
VR355
VR353
VR352

VR351	TRACKING BALANCE
VR352	RF OFFSET
VR353	TE OFFSET
VR354	TRACKING SERVO LOOP GAIN
VR355	FOCUS ERROR BIAS
VR356	FOCUS SERVO LOOP GAIN

Fig. 23

● Test Point

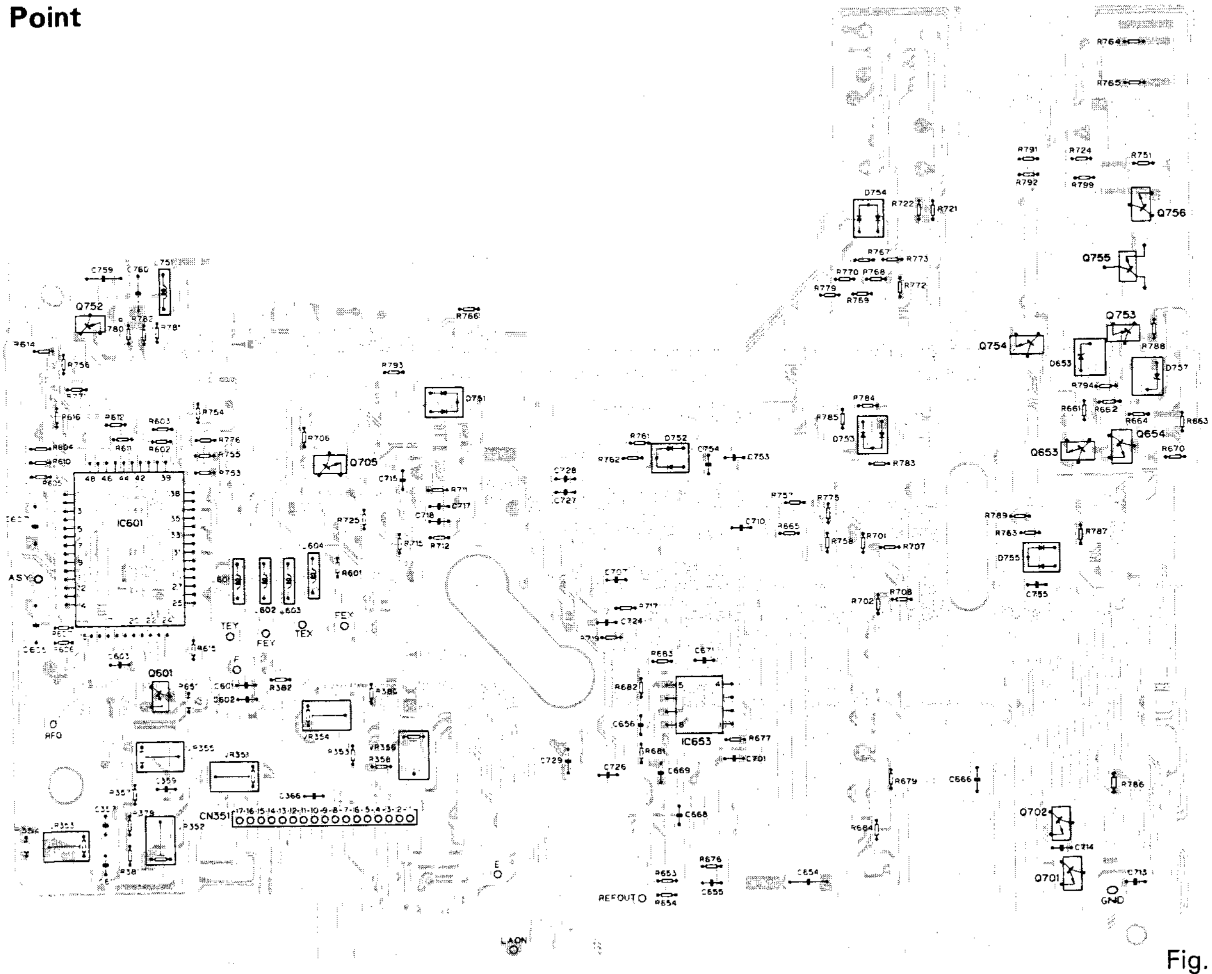

IC601
IC653
CN351
Q601
Q705
Q752
Q753
Q754
Q755
Q756
Q653
Q654
Q701
Q702
D751
D752
D753
D754
D755
D757
D653
ASY
TEY
FEY
TEX
FEX
F
E
RFO
RFEOUT
GND
LAON
VR354
VR355
VR356
VR351

Fig. 24

11.1 Grating Adjustment (Rough adjustment)

- Purpose: The grating may need adjustment in a replaced pick-up unit.
- Maladjustment symptoms: No disc playback;track jumping.

• Measuring equipment / jigs	• Oscilloscope,clock driver,grating adjustment filter (bandpass filter)(GGF-133),AC millivoltmeter
• Measuring point	• TEY
• Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Test mode
• Adjustment position	• Pick-up grating adjustment hole

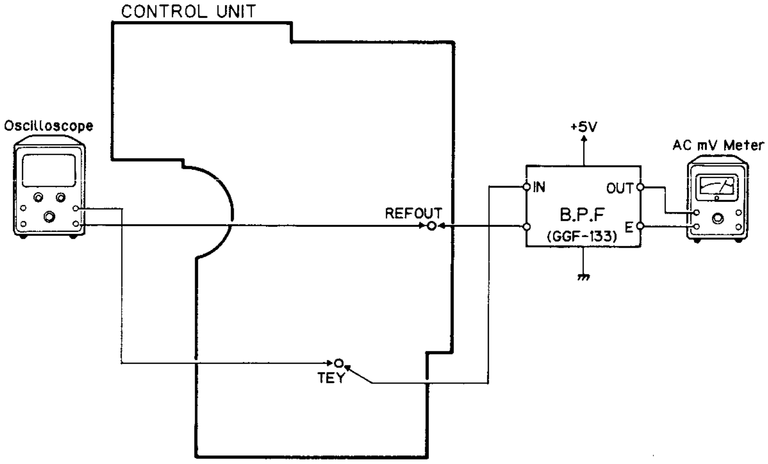
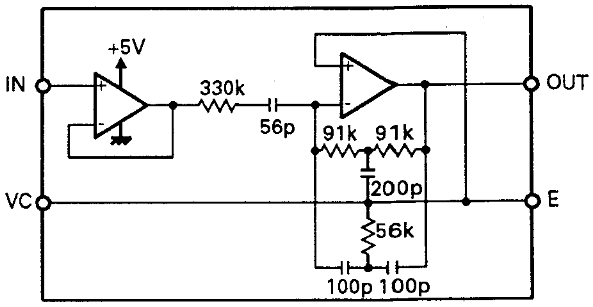


Fig. 25

Adjustment Procedure

1. Switch regulator ON in test mode,and load a disc.
2. Use ⏭ or ⏮ key as required to bring pick-up at the adjusting hole on control unit (tune TNO 6). (TYPE 3:TNO 7)
   Mutch with TNO 6 (TYPE 3:TNO 7) when relewe-ing the control unit.
3. Press the **F•2** key to close focus.
4. While monitoring the TEY filter output by AC milli-voltmeter,turn the grating adjustment hole slowly. The AC voltage increases and decreases while turning the screw. Search for the minimum voltage level. (This corresponds to the position where the grating is on a track,and is referred to as the null point.)
5. Then while monitoring TEY by oscilloscope,turn the driver slowly clockwise from the null point (as seen from under the pick-up) until the first waveform peak amplitude is reached.

B.P.F.(GGF-133)



11.2 Tangential Skew Check

- Purpose: To check whether tangential skew has been misaligned or not when replacing the pick-up unit.
- Maladjustment symptoms: No disc playback;track jumping.

• Measuring equipment / jigs	• Oscilloscope,screwdriver
• Measuring point	• RFO
• Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Normal mode
• Adjustment position	• Pick-up tangential adjustment screw

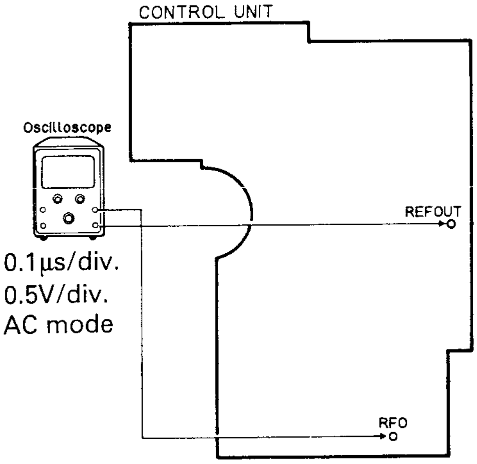


Fig. 26

Adjustment Procedure

1. Check that the pick up position does not differ from that at the same time of grating adjustment.(TYPE 4:TNO 6,TYPE 3:TNO 7)
2. Turn the tangential adjustment screw to obtain a good RF waveform eye pattern. Turn the adjustment screw both clockwise and counterclockwise to points where the eye pattern deteriorates,and take the midway point as the adjustment point. As a general guide,look for an overall clear waveform,and one of the diamond shapes in the eye pattern. The diamond shapes should appear in fine lines at the point of optimum adjustment. Take care not to knock the pick-up with the screwdriver at this stage. (This kind of accident can result in loss of focus.) (See Fig.27,28)
3. Apply "screw-lock" to the tangential adjustment screw.
4. After adjusting tangential skew,also adjust the grating.

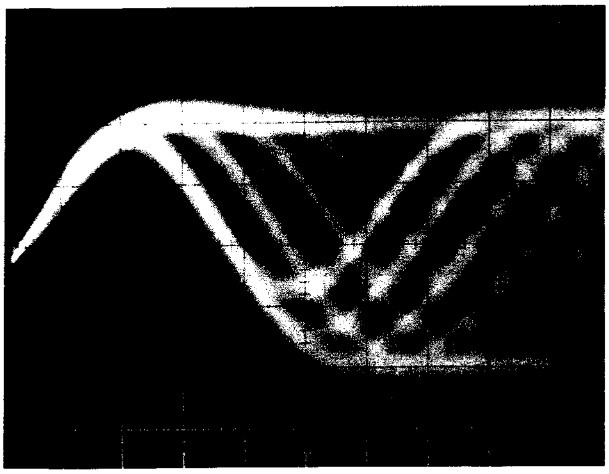
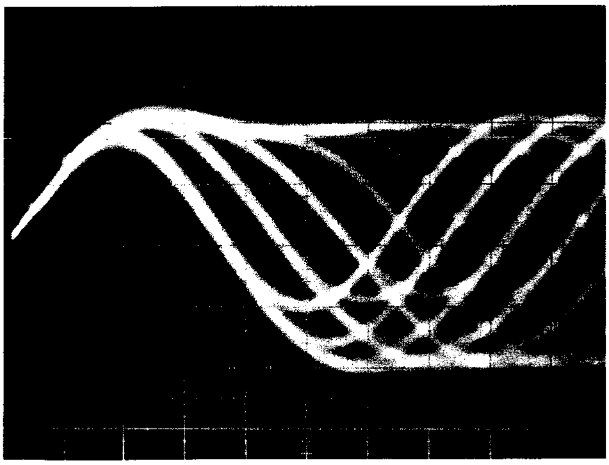


Fig. 27



AC mode
0.5V/div.
0.1μs/div.

Fig. 28

11.3 Grating Adjustment (Fine adjustment)

- Purpose: The grating may need adjustment in a replaced pick-up unit.
- Maladjustment symptoms: No disc playback;track jumping.

• Measuring equipment / jigs	• Oscilloscope,clock driver,two low-pass filters
• Measuring point	• TEY,E LPF output,F LPF output
• Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Test mode
• Adjustment position	• Pick-up grating adjustment hole

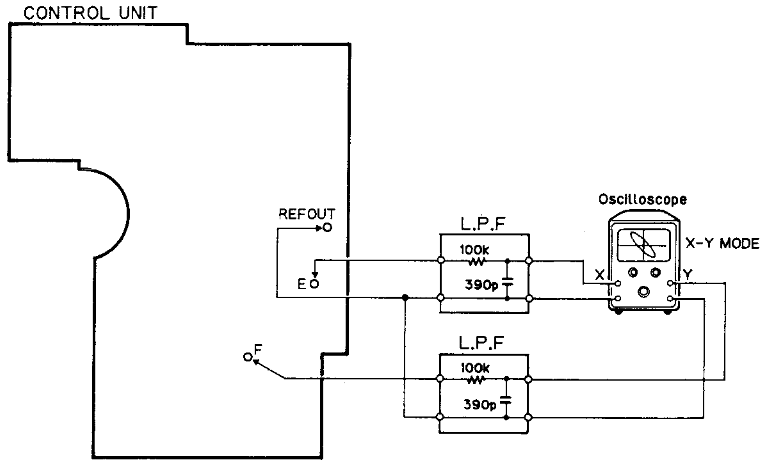


Fig. 29

Adjustment Procedure

1. Switch regulator ON in test mode,and load a disc.
2. Use ⏭ or ⏮ key as required to bring pick-up at the adjusting hole on control unit (tune TNO 6). (TYPE 3:TNO 7)
   Mutch with TNO 6 (TYPE 3:TNO 7) when relewe-ing the control unit.
3. Press the **F•2** key to close focus.
4. With the E low-pass filter output connected to the X axis of the oscilloscope,and the F low-pass filter output connected to the Y axis,apply an input in AC mode and observe the Lissajous figurs.(Fig.30-35)
5. Using the driver,adjust the Lissajous figure to a single line (or as close as possible)
6. Switch regulator OFF and remove the filters.

TEY waveform 5ms/div., 0.5V/div.

Null Point

Lissajous figure (AC input)
Horizontal axis E 20mV/div.
Vertical axis F 20mV/div.

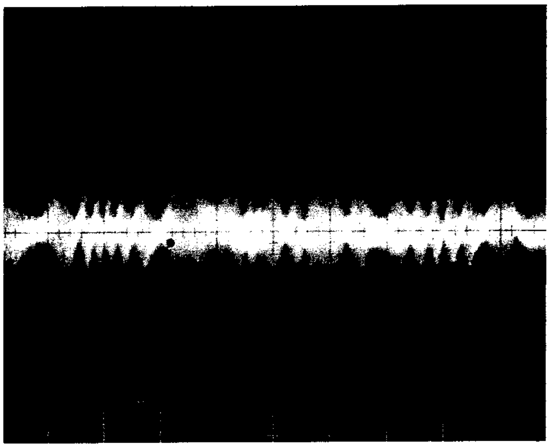


Fig. 30

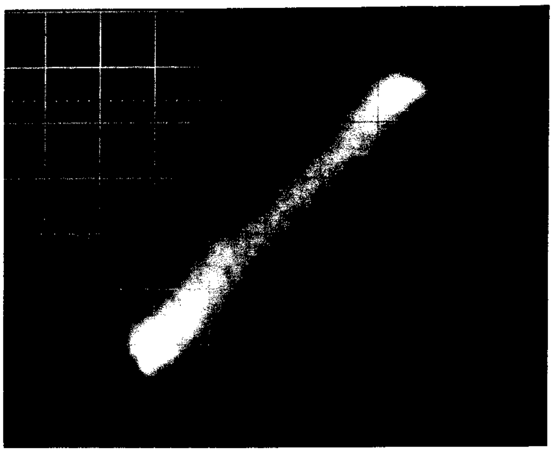


Fig. 31

"Rough" adjustment

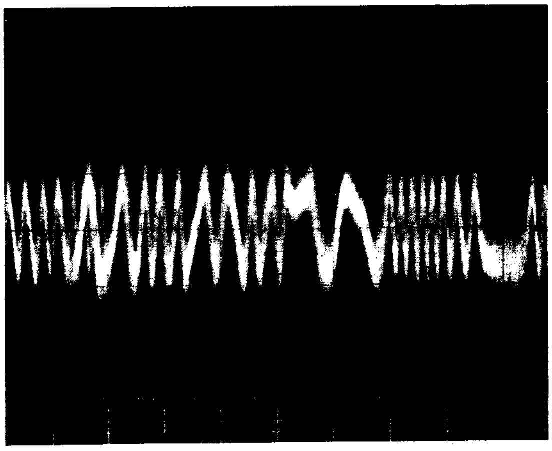


Fig. 32

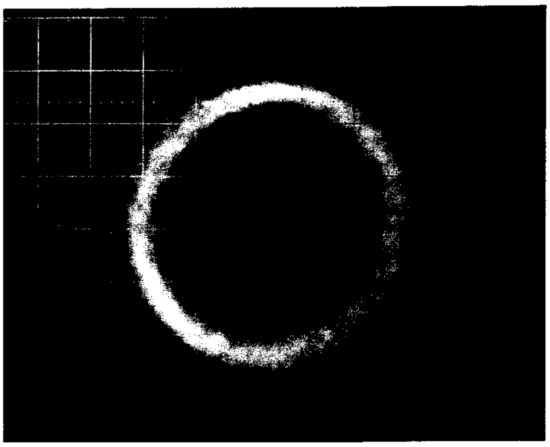


Fig. 33

Final adjustment

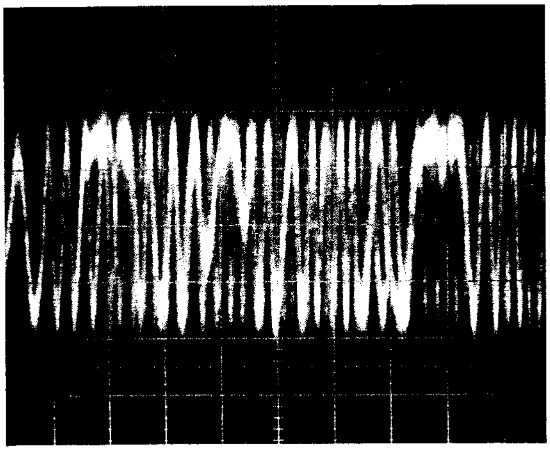


Fig. 34

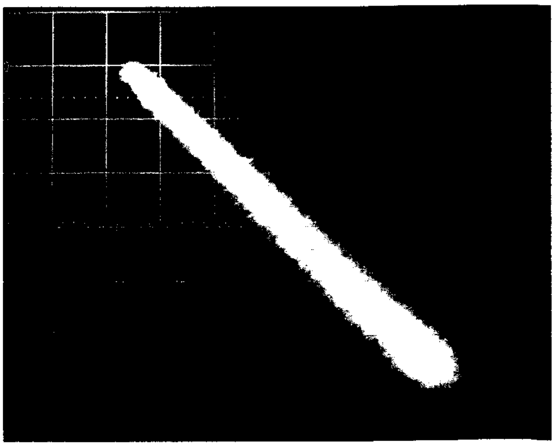


Fig. 35

11.4 FE Bias Adjustment

- Purpose: To adjust the focus servo bias to an optimum value.
- Maladjustment symptoms: Focus closing difficulty,poor playability.

• Measuring equipment / jigs	• Oscilloscope
• Measuring point	• RFO
• Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Normal mode
• Adjustment position	• VR355(FEB)

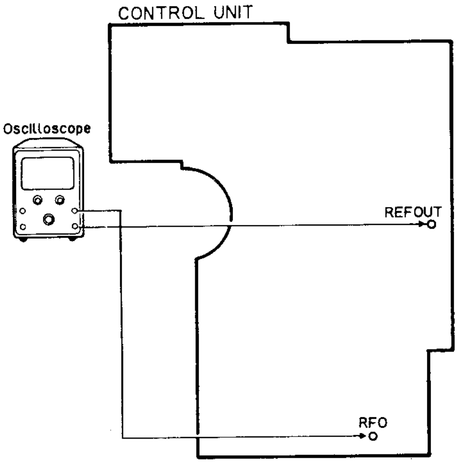
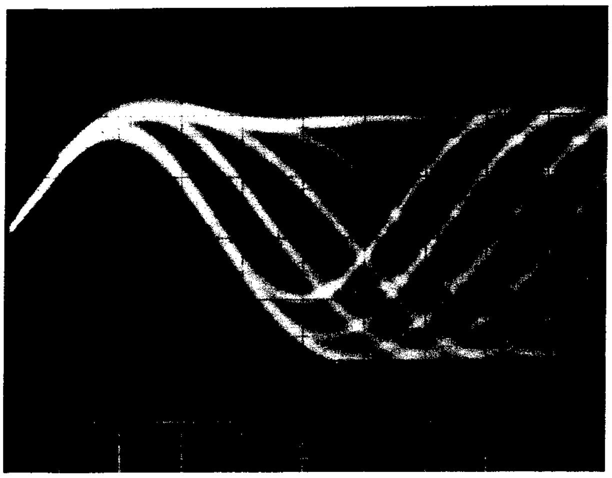


Fig. 36

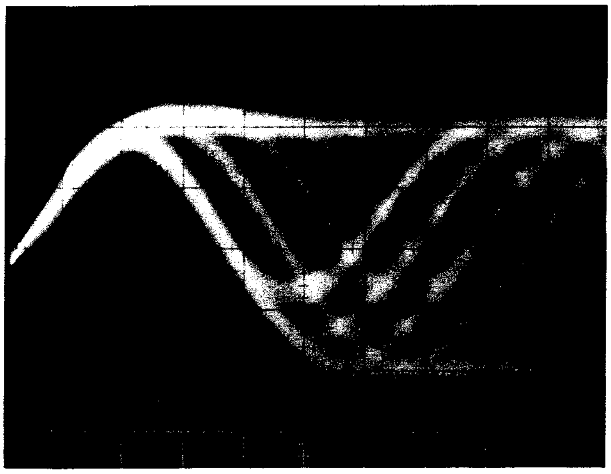
Adjustment Procedure

1. Play in normal mode.
2. Observe RFO in respect to REFOUT in the oscilloscope,and adjust VR355(FEB) to obtain maximum RF and optimum eye pattern. (See Fig.37,38)



OK

Fig. 37

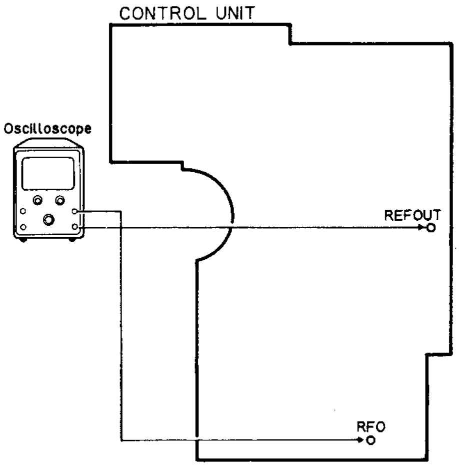


AC Mode Before adjustment Fig. 38

11.5 RF Offset Adjustment

- Purpose: To adjust the RF amplifier offset to a suitable value.
- Maladjustment symptoms: Focus closure fails readily.

• Measuring equipment / jigs	• Oscilloscope
• Measuring point	• RFO
• Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Normal mode
• Adjustment position	• VR352(RFO)

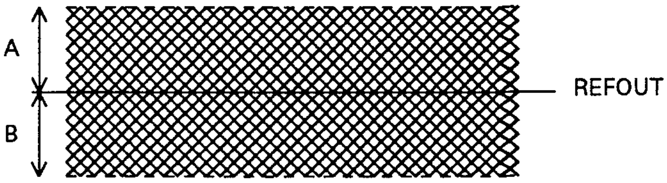


When using a multi-channel oscilloscope,do not connect the other negative probe to ground.

Fig. 39

Adjustment Procedure

1. Play tune TNO 12 in normal mode. (TYPE 3:TNO 14)
2. Use VR352 to adjust the RFO waveform so that REFOUT appears at the center. (A-B must not exceed 100 mV.)



11.6 TE Offset Adjustment-1

- Purpose: To adjust the electrical offset of the tracking servo to zero.
- Maladjustment symptoms: Search times too long,carriage run-away.

• Measuring equipment / jigs	• DC voltmeter
• Measuring point	• TEY
• Test disc and setting	• No Disc • Test mode
• Adjustment position	• VR353(TEO)

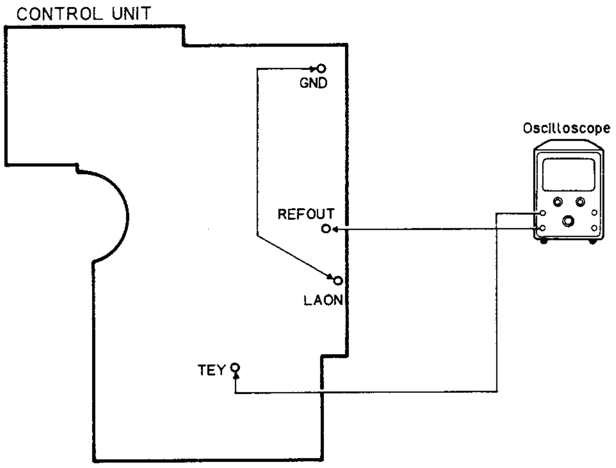


Fig. 40

Adjustment Procedure

1. Connect LAON to GND.
2. Switch regulator ON while in test mode.
3. Using VR353(TEO),adjust the TEY output DC voltage in reference to REFOUT to a value of 0±25mV.
4. Switch regulator OFF.

11.7 Tracking Balance Adjustment-1

- Purpose: To adjust the tracking servo offset to zero.
- Maladjustment symptoms: Search times too long,poor playability,carriage run-away.

• Measuring equipment / jigs	• Oscilloscope
• Measuring point	• TEY (Tracking error signal)
• Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Test mode
• Adjustment position	• VR351(T.BAL)

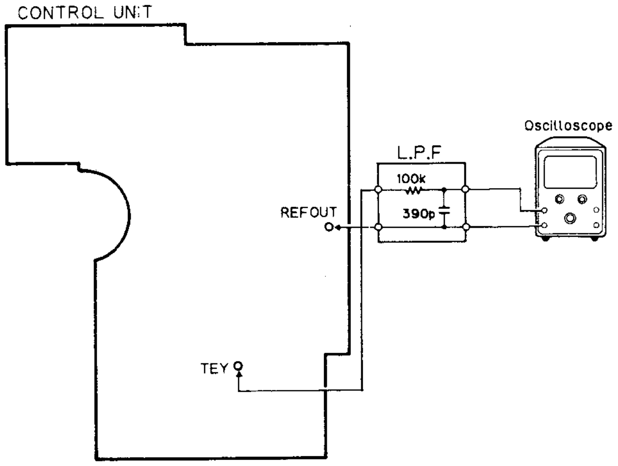


Fig. 41

Adjustment Procedure

1. Set the test disc (SONY TYPE 4). Switch regulator ON.
2. Using the ⏭ or ⏮ key,move the pick-up to about the center of the signal surface.
3. Press the **F•2** key to close focus.
4. Using an oscilloscope,observe the TEY signal in respect to REFOUT.
   Then adjust VR351(T.BAL) to set the positive and negative amplitudes to the same levels.(See Fig.42-44)
5. Switch the power OFF.

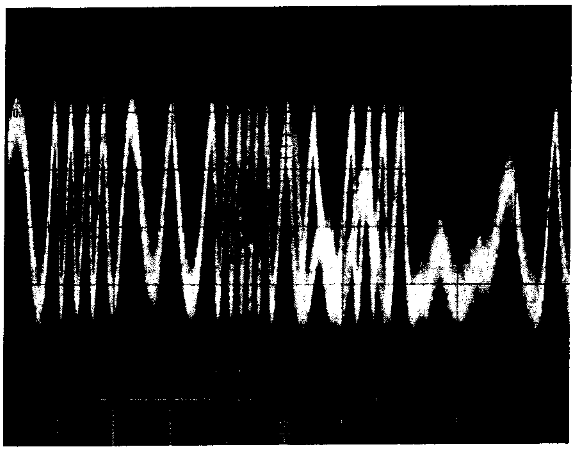


Fig. 42

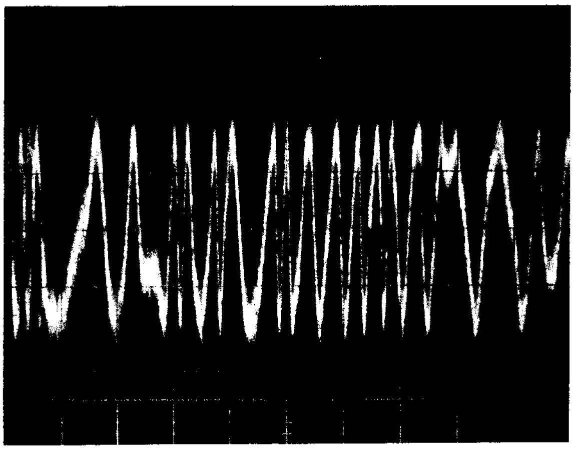
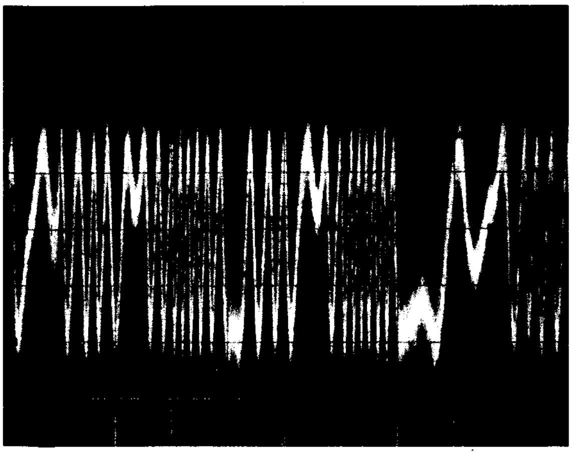


Fig. 43



10ms/div.
0.5V/div.
DC Mode

Fig. 44

11.8 Focus Servo Loop Gain Adjustment

- Purpose: To adjust the focus servo loop gain to an optimum value.
- Maladjustment symptoms: Poor playability,reduced resistance to vibration,focus closure fails readily.

• Measuring equipment / jigs	• Oscillator,gain adjustment filter (GGF-065),dual meter milli-voltmeter
• Measuring point	• FEX,FEY
• Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Normal mode
• Adjustment position	• VR356(FG)

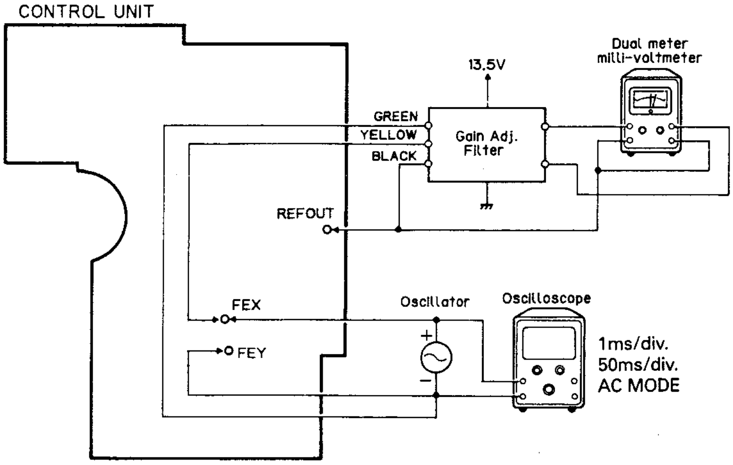

CONTROL UNIT
13.5V
Dual meter milli-voltmeter
GREEN
YELLOW
BLACK
Gain Adj. Filter
REFOUT
FEX
FEY
Oscillator
Oscilloscope
+
−
1ms/div.
50ms/div.
AC MODE

Fig. 45

Adjustment Procedure

1. After checking that the power is OFF, connect the gain adjustment filter and measuring equipment as shown in the above diagram.
2. Play tune TNO 12 in normal mode. (TYPE 3:TNO 14)
3. Set the oscillator to 1kHz,and observe the FEX/FEY output in the oscilloscope. Adjust the oscillator output to obtain a FEX/FEY output of 100mVp-p.
4. Adjust VR356(FG) to obtain a milli-voltmeter difference of 0±0.5dB.

11.9 Tracking Servo Loop Gain Adjustment

- Purpose: To adjust the tracking servo loop gain to an optimum value.
- Maladjustment symptoms: Poor playability,reduced resistance to vibration.

• Measuring equipment / jigs	• Oscillator,gain adjustment filter (GGF-065),dual meter milli- voltmeter
• Measuring point	• TEX,TEY
• Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Normal mode
• Adjustment position	• VR354(TG)

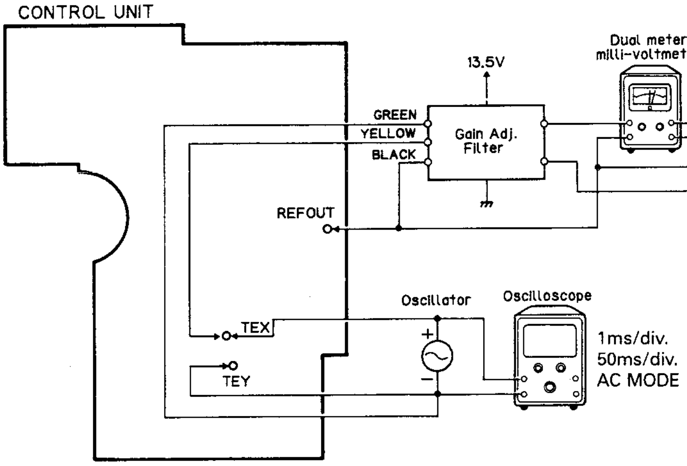

CONTROL UNIT
13.5V
Dual meter
milli-voltmeter
GREEN
YELLOW
BLACK
Gain Adj.
Filter
REFOUT
Oscillator
Oscilloscope
TEX
TEY
+
−
1ms/div.
50ms/div.
AC MODE

Fig. 46

Adjustment Procedure

1. After checking that the power is OFF, connect the gain adjustment filter and measuring equipment as shown in the above diagram.
2. Play tune TNO 12 in normal mode. (TYPE 3:TNO 14)
3. Set the oscillator to 1.4kHz,and observe the TEX/TEY output in the oscilloscope. Adjust the oscillator output to obtain a TEX/TEY output of 300mVp-p.
4. Adjust VR354(TG) to obtain a milli-voltmeter difference of 0±0.5dB.

11.10 TE Offset Adjustment-2

- Purpose: To adjust the electrical offset of the tracking servo to zero.
- Maladjustment symptoms: Search times too long,carriage run-away.

• Measuring equipment / jigs	• DC voltmeter
• Measuring point	• TEY
• Test disc and setting	• No Disc • Test mode
• Adjustment position	• VR353

Adjustment Procedure

Same as for TE offset adjustment-1,but with the DC voltage of the TEY output adjusted to 0±50mV.
The purpose of this additional adjustment is to correct any deviations generated when carrying out the tracking balance and tracking servo loop gain adjustments after completing TE offset adjustment-1.

11.11 Tracking Balance Adjustment-2

- Purpose: To adjust the tracking servo offset to zero.
- Maladjustment symptoms: Search times too long,poor playability,carriage run-away.

• Measuring equipment / jigs	• Oscilloscope
• Measuring point	• TEY
• Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Test mode
• Adjustment position	• VR351

Adjustment Procedure

Steps 1 thru 5 same as tracking balance adjustment-1.

6. Check that the level difference between the positive and negative amplitudes of the TEY signal is within 5% (See Fig.42-44). If greater than 5%,adjust with VR351.
7. If further adjustment was necessary in step 6,repeat TE offset adjustment-2.

11. 12 TUNER ADJUSTMENT

• Connection Diagram

NOTICE:

Select C1 so that total capacity of 80pF is attained from the direction of the receiver jack.

Z: Output impedance of SSG.

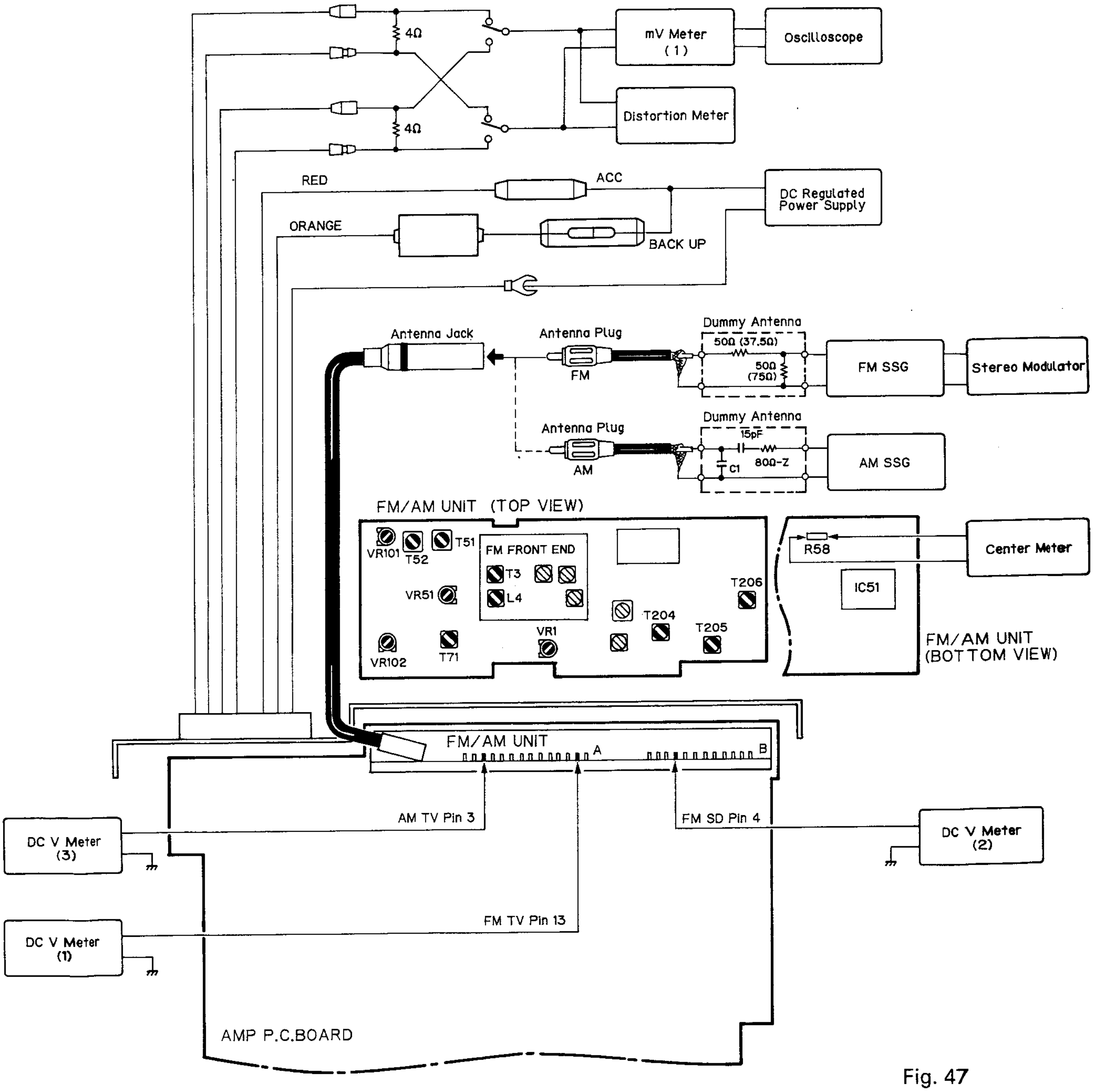

4Ω
4Ω
mV Meter (1)
Oscilloscope
Distortion Meter
RED
ACC
ORANGE
BACK UP
DC Regulated Power Supply
Antenna Jack
Antenna Plug
FM
Dummy Antenna
50Ω (37.5Ω)
50Ω (75Ω)
FM SSG
Stereo Modulator
Antenna Plug
AM
Dummy Antenna
15pF
C1
80Ω-Z
AM SSG
FM/AM UNIT (TOP VIEW)
VR101
T52
T51
FM FRONT END
T3
L4
VR51
VR102
T71
VR1
T204
T206
T205
R58
IC51
Center Meter
FM/AM UNIT (BOTTOM VIEW)
FM/AM UNIT
A
B
AM TV Pin 3
FM SD Pin 4
DC V Meter (3)
DC V Meter (2)
FM TV Pin 13
DC V Meter (1)
AMP P.C.BOARD

Fig. 47

FM ADJUSTMENT

※ Stereo MOD.: 1kHz,L+R=90% , Pilot=10%
*( ):UC Model

	No.	FM SSG(400Hz,100%)		Displayed Frequency (MHz)	Adjusting Point	Adjustment Method (Switch Position)
		Frequency(MHz)	Level(dBf)			
Front End	1			108.0 *(107.9)	L4	DC V Meter(1):7.3±0.2V
	2			87.5 *(87.9)	——	Verify that DC V Meter(1)is more than 1.4±0.6V.
	3	98.1	10	98.1	T3	mV Meter(1):Maximum
IF	1	98.1025	65	98.1	T51	Center Meter:0
	2	98.1	65	98.1	T52	Distortion Meter:Minimum
	3	Repeat No.1-2 alternately so that the center meter indicates the 0 output and distortion meter indicates the minimum output.				
	4	98.1	13	98.1	T71	Oscilloscope :Optimum Symmetry
	5	※98.1	65	98.1	T71	Distortion Meter:Minimum (Rotate T71 less than ±90°)
Soft Mute	1	98.1	65	98.1	—	mV Meter(1): A dB (FM STEREO MODE)
	2	98.1	15	98.1	VR102	mV Meter(1): A-3 dB (FM STEREO MODE)
ARC	1	※98.1	40	98.1	VR101	mV Meter(1):Separation 5 dB (FM STEREO MODE)
SD	1	98.1	20	98.1	VR51	DC V Meter(2):Approx. 5V
	2	98.1	19	98.1	—	Verify that DC V Meter (2)is approx. 0V
	3	98.1	60	98.1	VR1	DC V Meter(2):Approx. 5V
	4	98.1	59	98.1	—	Verify that DC V Meter (2)is approx. 0V

AM ADJUSTMENT

*( ):ES model when tuning step at 9kHz.

	No.	AM SSG(400Hz,30%)		Displayed Frequency (kHz)	Adjusting Point	Adjustment Method (Switch Position)
		Frequency(kHz)	Level(dBμV)			
Tuning Volt	1			530 *(531)	——	Verify that DC V Meter (4) is more than 2.0V.
	2			1,710 *(1,602)	——	Verify that DC V Meter (4) is less than 6.5V.
IF	1	1,000 (999)	15	1,000 (999)	T204,205, 206	mV Meter(1):Maximum

11. 13 CLOCK, DOLBY NR ADJUSTMENT

- **Connection Diagram**

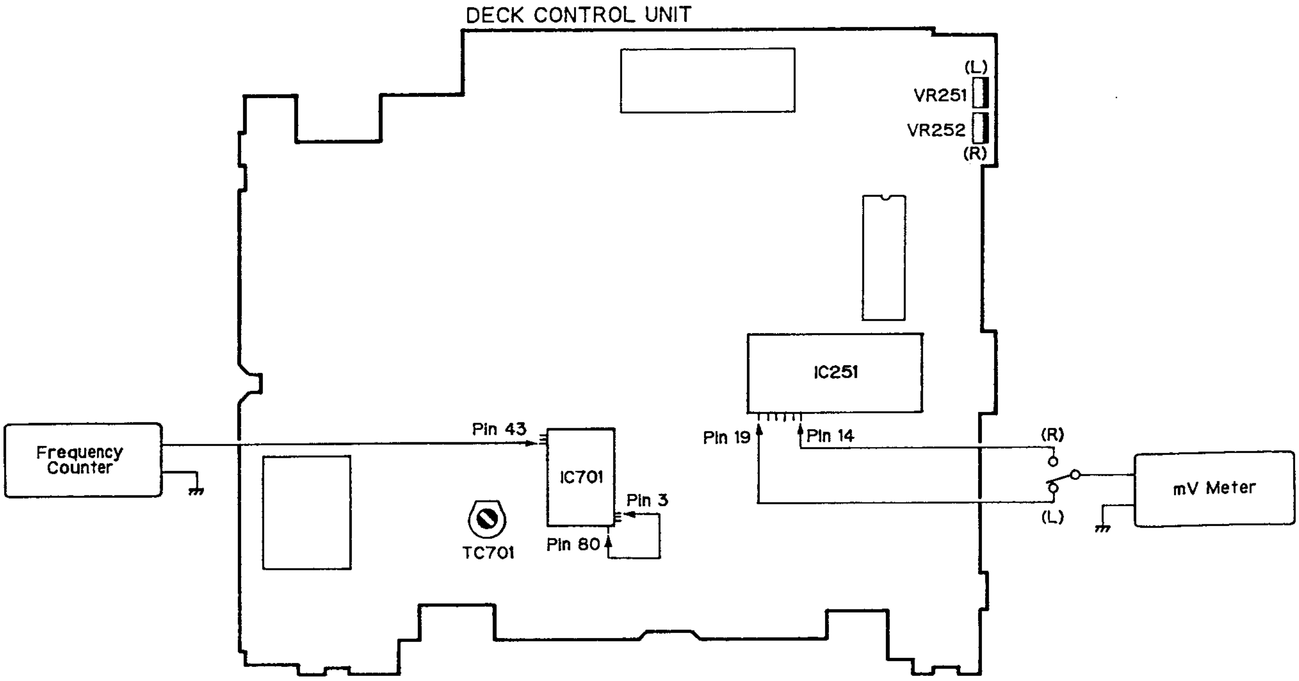

DECK CONTROL UNIT
(L)
VR251
VR252
(R)
IC251
Frequency Counter
Pin 43
IC701
Pin 3
Pin 80
TC701
Pin 19
Pin 14
(R)
(L)
mV Meter

Fig. 48

CLOCK ADJUSTMENT

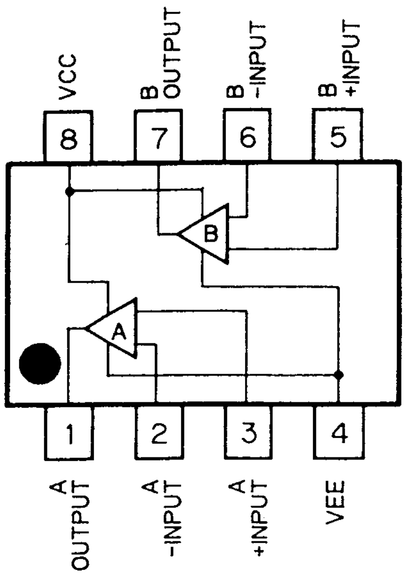
No.	Adjusting Point	Adjustment Method
1		Take out the tape/disc and put the door (flap) into the CLOSE mode.
2		With both backup and accessory power supplied, turn off every mode (TUNER, TAPE and CD).
3		Connect Pin 80 with Pin 3 on the IC701.
4	TC701	Connect a frequency counter to Pin 43 on the IC701. Adjust the TC701 so as to attain a frequency of 1.048576MHz ± 2Hz.

DOLBY NR ADJUSTMENT

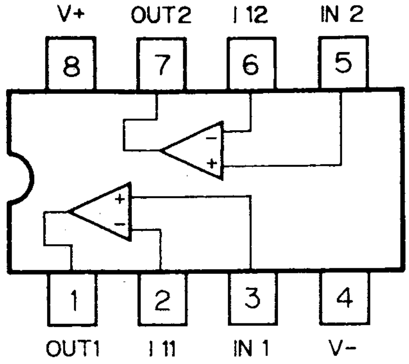
No.	Cassette Tape	Adjusting Point	Adjustment Method (Switch Position)
1	NCT-150(400Hz, 200nwb/m)	VR251(Lch), VR252(Rch)	mV Meter:-6dBs (DOLBY NR Switch:OFF)

• ICs

RC2068MD1

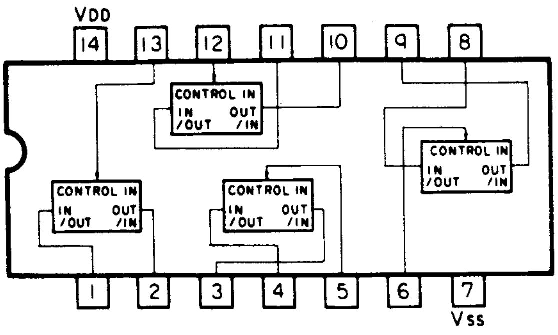

VCC
B OUTPUT
B -INPUT
B +INPUT
8
7
6
5
B
A
1
2
3
4
A OUTPUT
A -INPUT
A +INPUT
VEE

UPC4570G

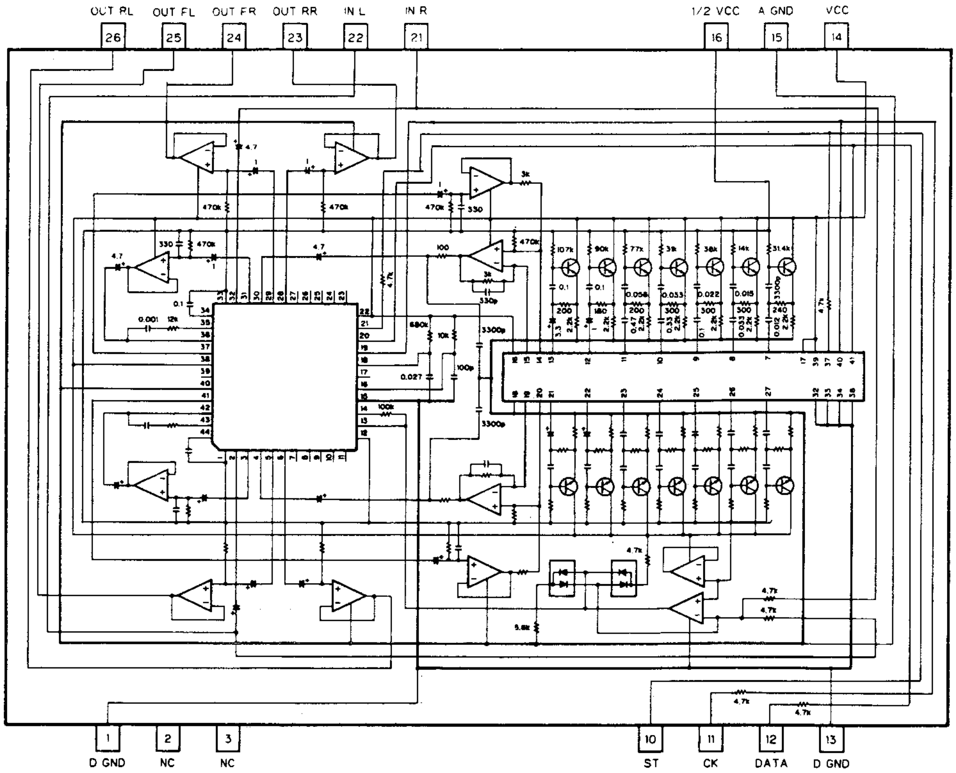

V+
OUT2
I 12
IN 2
8
7
6
5
−
+
+
−
1
2
3
4
OUT1
I 11
IN 1
V−

*TC4066BF

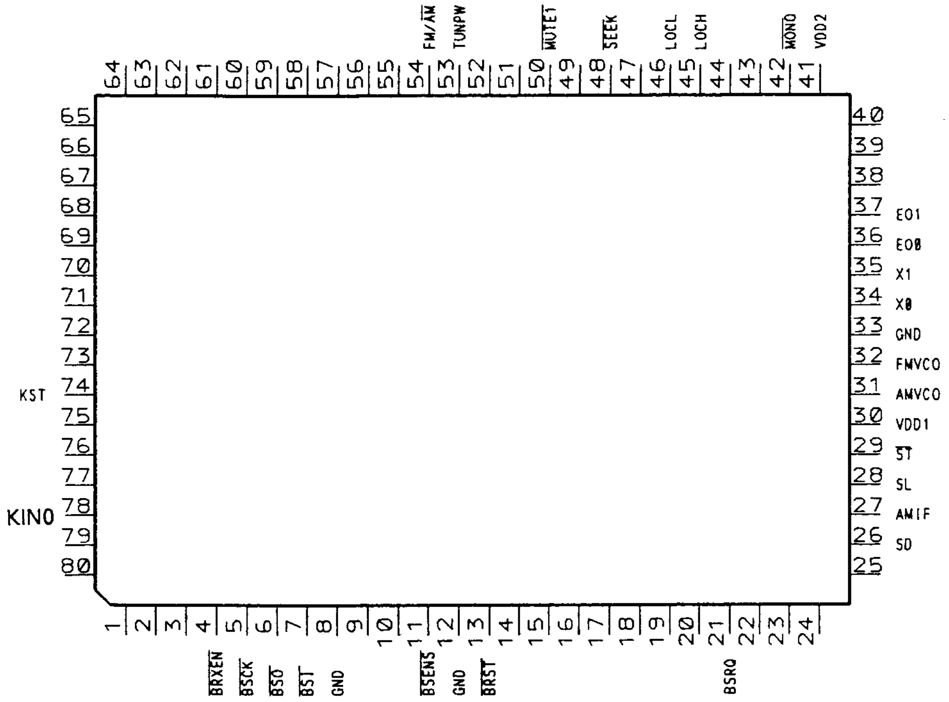
*IC's marked by * are MOS type.*
Be careful in handling them because they are very liable to be damaged by electrostatic induction.


VDD
14
13
12
11
10
9
8
CONTROL IN
IN /OUT
OUT /IN
CONTROL IN
IN /OUT
OUT /IN
CONTROL IN
IN /OUT
OUT /IN
CONTROL IN
IN /OUT
OUT /IN
1
2
3
4
5
6
7
Vss

CWV1015

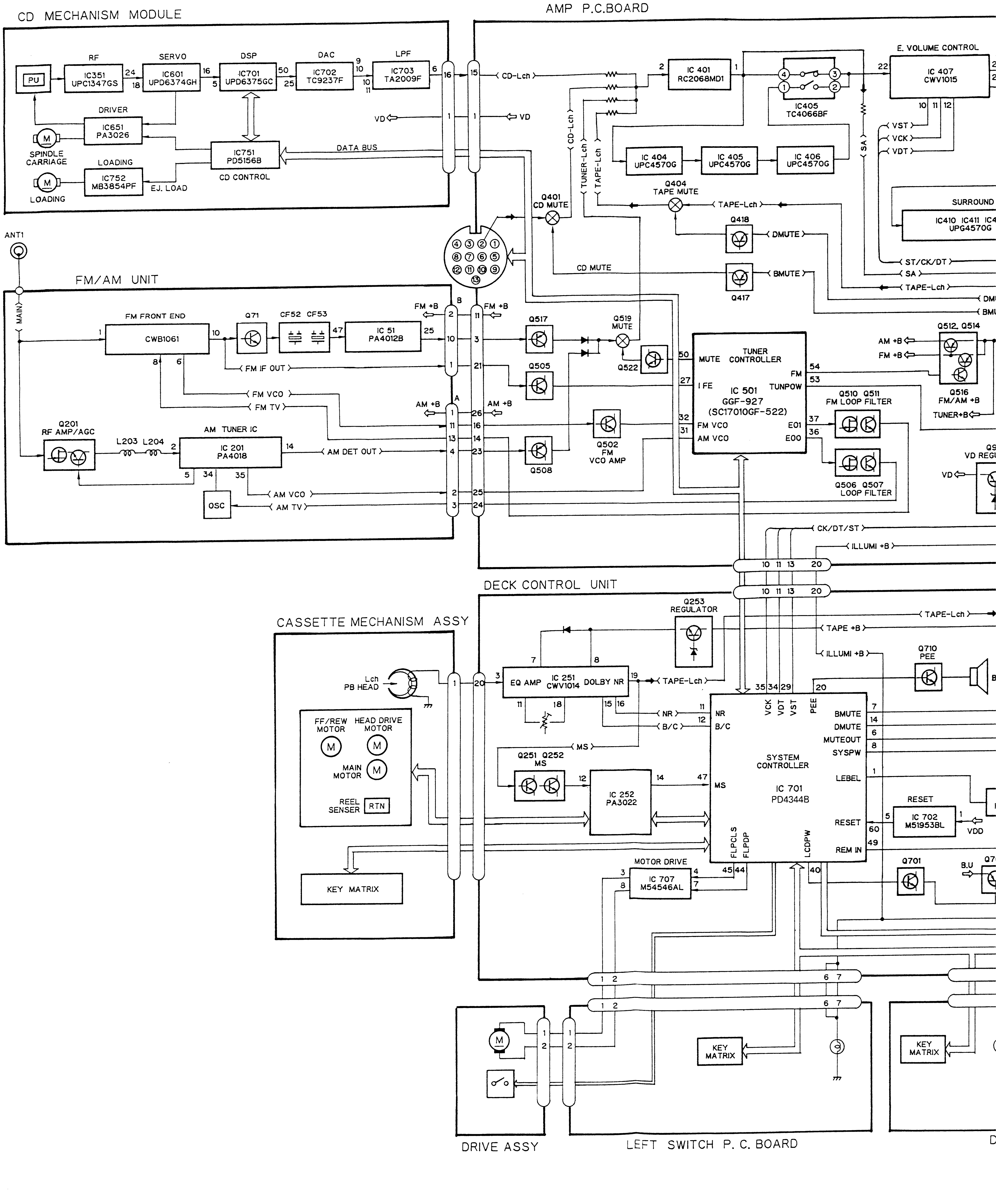

OUT RL
26
OUT FL
25
OUT FR
24
OUT RR
23
IN L
22
IN R
21
1/2 VCC
16
A GND
15
VCC
14
1
D GND
2
NC
3
NC
10
ST
11
CK
12
DATA
13
D GND

*GGF-927 (SC17010GF-522)


FM/AM
TUNPW
MUTE1
SEEK
LOCL
LOCH
MONO
VDD2
64
63
62
61
60
59
58
57
56
55
54
53
52
51
50
49
48
47
46
45
44
43
42
41
65
66
67
68
69
70
71
72
73
KST 74
75
76
77
KIN0 78
79
80
40
39
38
37 E01
36 E00
35 X1
34 X0
33 GND
32 FMVCO
31 AMVCO
30 VDD1
29 ST
28 SL
27 AMIF
26 SD
25
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
BRXEN
BSCK
BSO
BST
GND
BSENS
GND
BRST
BSRQ

12. BLOCK DIAGRAM

- **FH-M75/UC**


CD MECHANISM MODULE
PU
RF
IC351
UPC1347GS
SERVO
IC601
UPD6374GH
DSP
IC701
UPD6375GC
DAC
IC702
TC9237F
LPF
IC703
TA2009F
DRIVER
IC651
PA3026
SPINDLE
CARRIAGE
LOADING
IC752
MB3854PF
EJ. LOAD
LOADING
IC751
PD5156B
CD CONTROL
DATA BUS
VD
AMP P.C.BOARD
CD-Lch
IC 401
RC2068MD1
IC405
TC4066BF
E. VOLUME CONTROL
IC 407
CWV1015
VST
VCK
VDT
SA
IC 404
UPC4570G
IC 405
UPC4570G
IC 406
UPC4570G
CD-Lch
TUNER-Lch
TAPE-Lch
Q401
CD MUTE
Q404
TAPE MUTE
TAPE-Lch
Q418
DMUTE
SURROUND
IC410 IC411 IC4
UPG4570G
ST/CK/DT
SA
TAPE-Lch
CD MUTE
Q417
BMUTE
DMU
BMU
ANT1
MAIN
FM/AM UNIT
FM FRONT END
CWB1061
Q71
CF52 CF53
IC 51
PA4012B
FM +B
FM +B
FM IF OUT
FM VCO
FM TV
Q517
Q519
MUTE
Q522
Q505
TUNER CONTROLLER
MUTE
I FE
FM
TUNPOW
IC 501
GGF-927
(SC17010GF-522)
FM VCO
AM VCO
E01
E00
Q512, Q514
AM +B
FM +B
Q516
FM/AM +B
Q510 Q511
FM LOOP FILTER
TUNER+B
Q502
FM
VCO AMP
Q508
Q506 Q507
LOOP FILTER
VD REGU
VD
AM +B
AM +B
Q201
RF AMP/AGC
L203 L204
AM TUNER IC
IC 201
PA4018
AM DET OUT
OSC
AM VCO
AM TV
CK/DT/ST
ILLUMI +B
DECK CONTROL UNIT
CASSETTE MECHANISM ASSY
Q253
REGULATOR
TAPE-Lch
TAPE +B
ILLUMI +B
Q710
PEE
Lch
PB HEAD
EQ AMP
IC 251
CWV1014
DOLBY NR
TAPE-Lch
NR
B/C
MS
FF/REW MOTOR
HEAD DRIVE MOTOR
MAIN MOTOR
REEL SENSER
RTN
Q251 Q252
MS
IC 252
PA3022
VCK
VDT
VST
PEE
NR
B/C
BMUTE
DMUTE
MUTEOUT
SYSPW
SYSTEM CONTROLLER
LEBEL
MS
IC 701
PD4344B
RESET
REM IN
FLPCLS
FLPDP
LCDPW
RESET
IC 702
M51953BL
VDD
Q701
B.U
Q70
KEY MATRIX
MOTOR DRIVE
IC 707
M54546AL
KEY MATRIX
KEY MATRIX
DRIVE ASSY
LEFT SWITCH P. C. BOARD
1
2
3
4
5

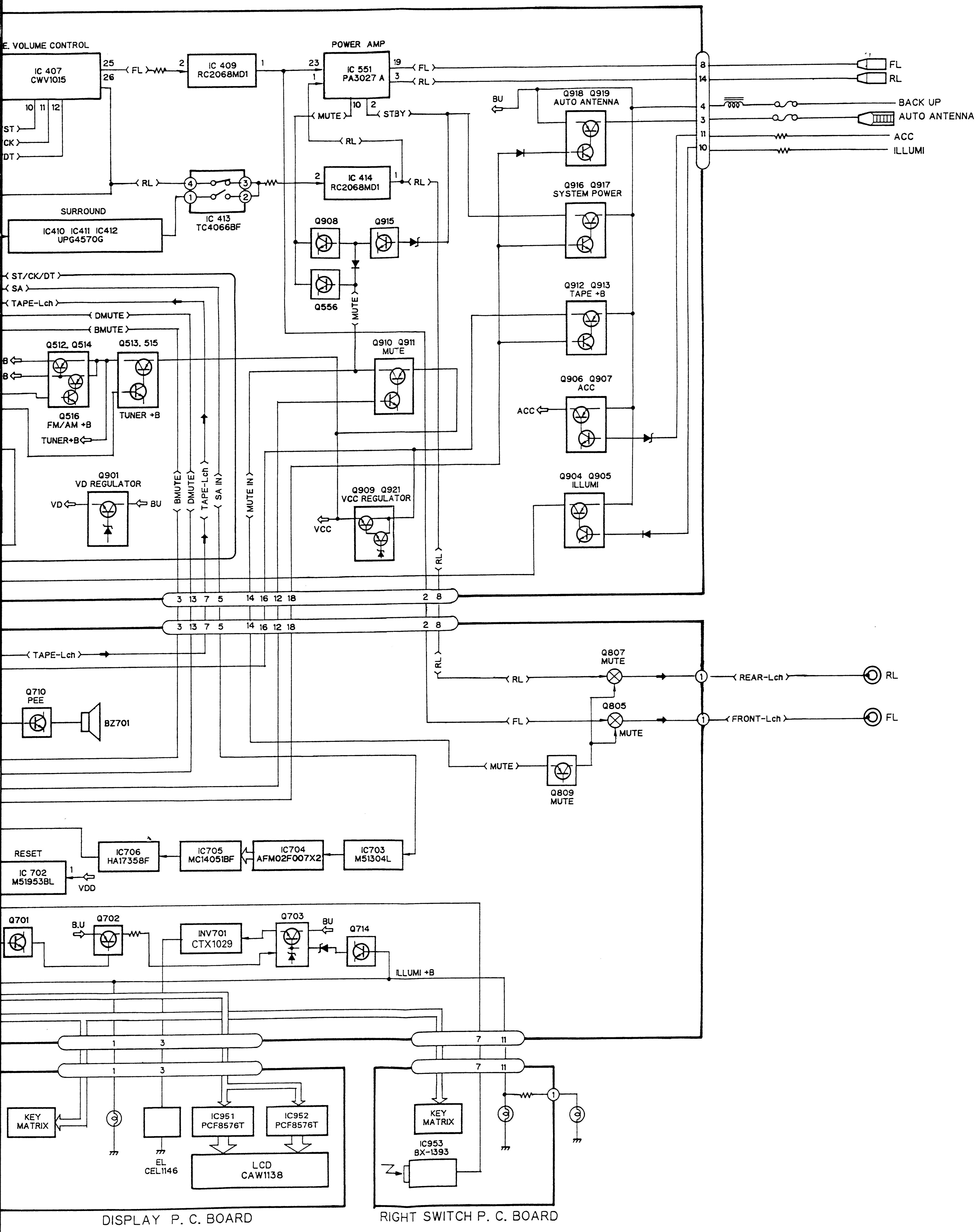
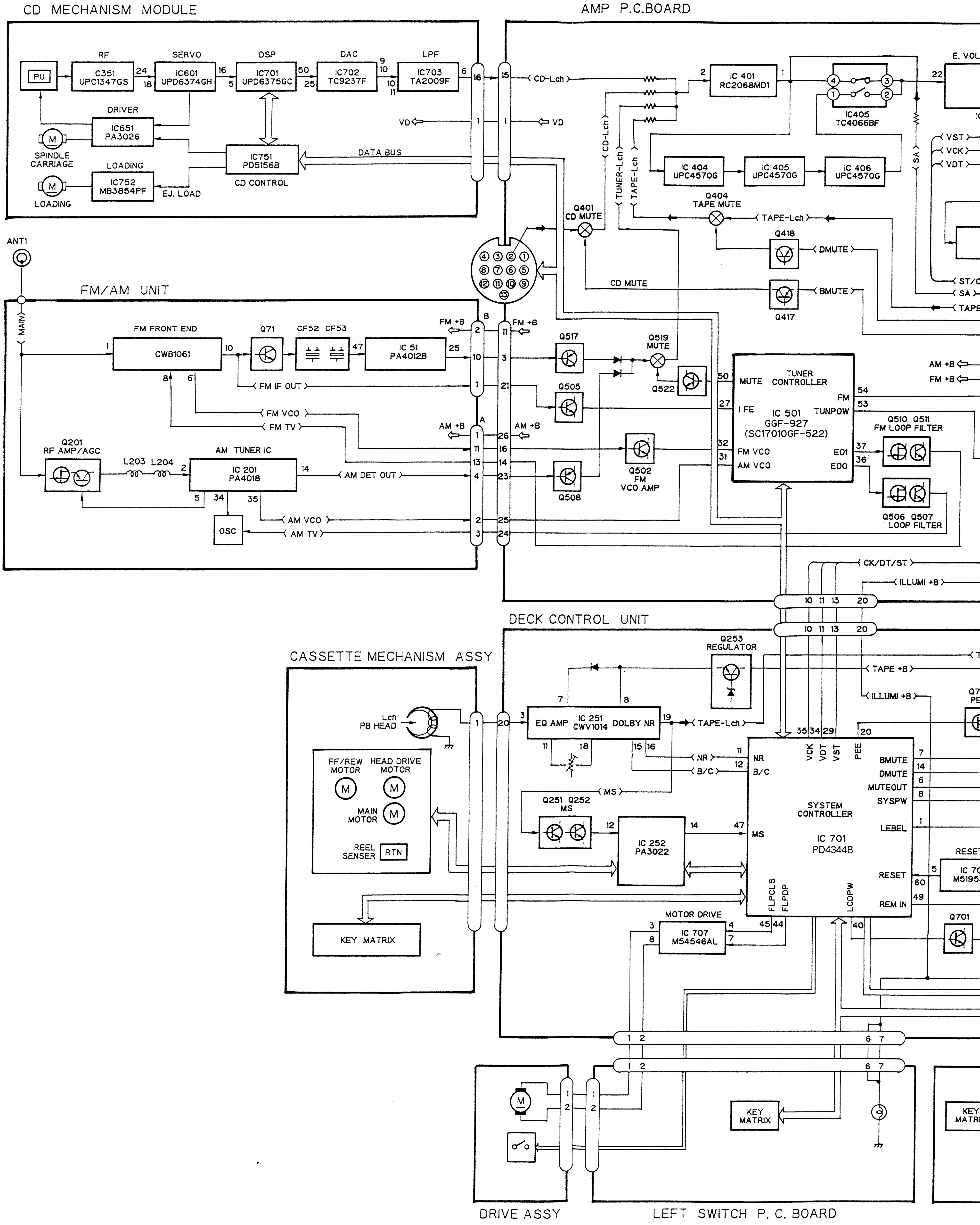

E. VOLUME CONTROL
IC 407
CWV1015
25
26
10 11 12
ST
CK
DT
FL
2
IC 409
RC2068MD1
1
POWER AMP
23
1
IC 551
PA3027 A
19
3
FL
RL
10 2
MUTE
STBY
RL
RL
4 3
1 2
IC 413
TC4066BF
2
IC 414
RC2068MD1
1
RL
SURROUND
IC410 IC411 IC412
UPG4570G
Q908
Q915
Q556
MUTE
BU
Q918 Q919
AUTO ANTENNA
Q916 Q917
SYSTEM POWER
Q912 Q913
TAPE +B
Q910 Q911
MUTE
Q906 Q907
ACC
ACC
Q904 Q905
ILLUMI
Q909 Q921
VCC REGULATOR
VCC
8
14
4
3
11
10
FL
RL
BACK UP
AUTO ANTENNA
ACC
ILLUMI
ST/CK/DT
SA
TAPE-Lch
DMUTE
BMUTE
Q512, Q514
Q513, 515
B
B
Q516
FM/AM +B
TUNER +B
TUNER+B
Q901
VD REGULATOR
VD
BU
BMUTE
DMUTE
TAPE-Lch
SA IN
MUTE IN
RL
3 13 7 5 14 16 12 18 2 8
3 13 7 5 14 16 12 18 2 8
TAPE-Lch
RL
RL
Q807
MUTE
Q805
FL
MUTE
1
1
REAR-Lch
FRONT-Lch
RL
FL
MUTE
Q809
MUTE
Q710
PEE
BZ701
RESET
IC 702
M51953BL
1
VDD
IC706
HA17358F
IC705
MC14051BF
IC704
AFM02F007X2
IC703
M51304L
Q701
B.U
Q702
INV701
CTX1029
Q703
BU
Q714
ILLUMI +B
1 3
1 3
7 11
7 11
KEY
MATRIX
EL
CEL1146
IC951
PCF8576T
IC952
PCF8576T
LCD
CAW1138
KEY
MATRIX
IC953
BX-1393
1
DISPLAY P. C. BOARD
RIGHT SWITCH P. C. BOARD
A
B
C
D
E
F
5
6
7
8
9

Fig. 49

- **FH-M70/ES**


CD MECHANISM MODULE
AMP P.C.BOARD
PU
RF
IC351
UPC1347GS
SERVO
IC601
UPD6374GH
DSP
IC701
UPD6375GC
DAC
IC702
TC9237F
LPF
IC703
TA2009F
DRIVER
IC651
PA3026
SPINDLE
CARRIAGE
LOADING
IC752
MB3854PF
EJ. LOAD
LOADING
IC751
PD5156B
CD CONTROL
DATA BUS
VD
CD-Lch
IC 401
RC2068MD1
IC405
TC4066BF
E. VOL
IC 404
UPC4570G
IC 405
UPC4570G
IC 406
UPC4570G
CD-Lch
TUNER-Lch
TAPE-Lch
SA
VST
VCK
VDT
Q401
CD MUTE
Q404
TAPE MUTE
TAPE-Lch
Q418
DMUTE
CD MUTE
Q417
BMUTE
ST/C
SA
TAPE
ANT1
FM/AM UNIT
MAIN
FM FRONT END
CWB1061
Q71
CF52 CF53
IC 51
PA4012B
FM +B
FM IF OUT
FM VCO
FM TV
Q517
Q519
MUTE
Q522
Q505
TUNER CONTROLLER
MUTE
IFE
IC 501
GGF-927
(SC17010GF-522)
FM
TUNPOW
FM VCO
AM VCO
E01
E00
AM +B
FM +B
Q510 Q511
FM LOOP FILTER
Q506 Q507
LOOP FILTER
Q201
RF AMP/AGC
L203 L204
AM TUNER IC
IC 201
PA4018
AM DET OUT
AM VCO
AM TV
OSC
AM +B
Q502
FM
VCO AMP
Q508
CK/DT/ST
ILLUMI +B
DECK CONTROL UNIT
CASSETTE MECHANISM ASSY
Lch
PB HEAD
FF/REW
MOTOR
HEAD DRIVE
MOTOR
MAIN
MOTOR
REEL
SENSER
RTN
KEY MATRIX
Q253
REGULATOR
TAPE +B
ILLUMI +B
EQ AMP
IC 251
CWV1014
DOLBY NR
TAPE-Lch
NR
B/C
MS
Q251 Q252
MS
IC 252
PA3022
MOTOR DRIVE
IC 707
M54546AL
NR
B/C
VCK
VDT
VST
PEE
BMUTE
DMUTE
MUTEOUT
SYSPW
SYSTEM
CONTROLLER
IC 701
PD4344B
LEBEL
MS
RESET
RESET
IC 70
M5195
REM IN
FLPCLS
FLPDP
LCDPW
Q701
DRIVE ASSY
LEFT SWITCH P. C. BOARD
KEY
MATRIX
KEY
MATRI

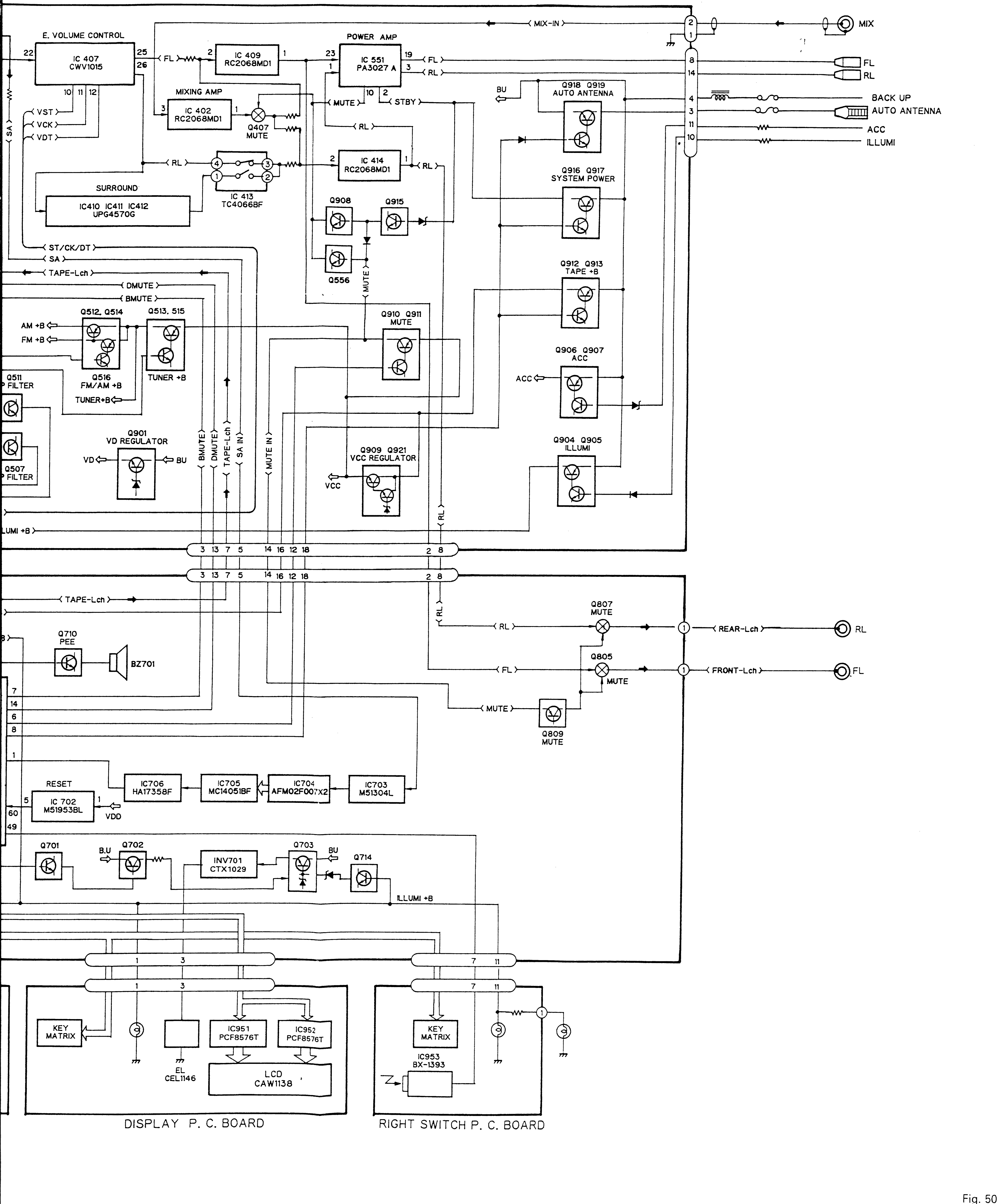

E. VOLUME CONTROL
IC 407
CWV1015
IC 409
RC2068MD1
MIXING AMP
IC 402
RC2068MD1
Q407
MUTE
POWER AMP
IC 551
PA3027 A
IC 414
RC2068MD1
SURROUND
IC410 IC411 IC412
UPG4570G
IC 413
TC4066BF
Q908
Q915
Q556
MIX-IN
MUTE
STBY
FL
RL
VST
VCK
VDT
SA
ST/CK/DT
TAPE-Lch
DMUTE
BMUTE
Q918 Q919
AUTO ANTENNA
BU
Q916 Q917
SYSTEM POWER
Q912 Q913
TAPE +B
Q910 Q911
MUTE
Q906 Q907
ACC
Q904 Q905
ILLUMI
Q909 Q921
VCC REGULATOR
VCC
Q512, Q514
Q513, 515
AM +B
FM +B
Q516
FM/AM +B
TUNER +B
TUNER+B
Q511
FILTER
Q507
FILTER
Q901
VD REGULATOR
VD
MUTE IN
SA IN
ILLUMI +B
MIX
BACK UP
AUTO ANTENNA
ACC
ILLUMI
Q807
MUTE
Q805
MUTE
Q809
MUTE
REAR-Lch
FRONT-Lch
Q710
PEE
BZ701
RESET
IC 702
M51953BL
VDD
IC706
HA17358F
IC705
MC14051BF
IC704
AFM02F007X2
IC703
M51304L
Q701
Q702
B.U
INV701
CTX1029
Q703
Q714
KEY
MATRIX
IC951
PCF8576T
IC952
PCF8576T
EL
CEL1146
LCD
CAW1138
IC953
BX-1393
DISPLAY P. C. BOARD
RIGHT SWITCH P. C. BOARD

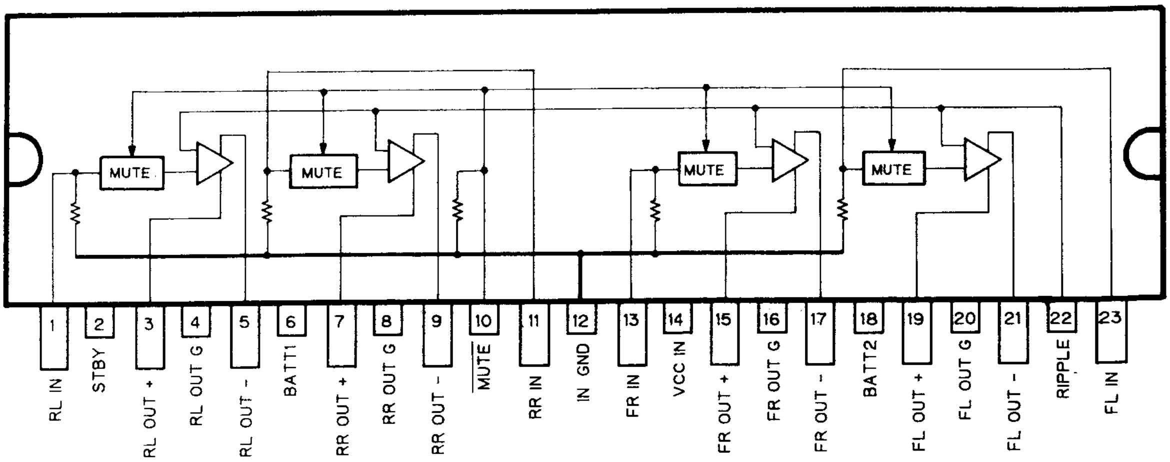
Fig. 50

• Pin Functions (GGF-927)

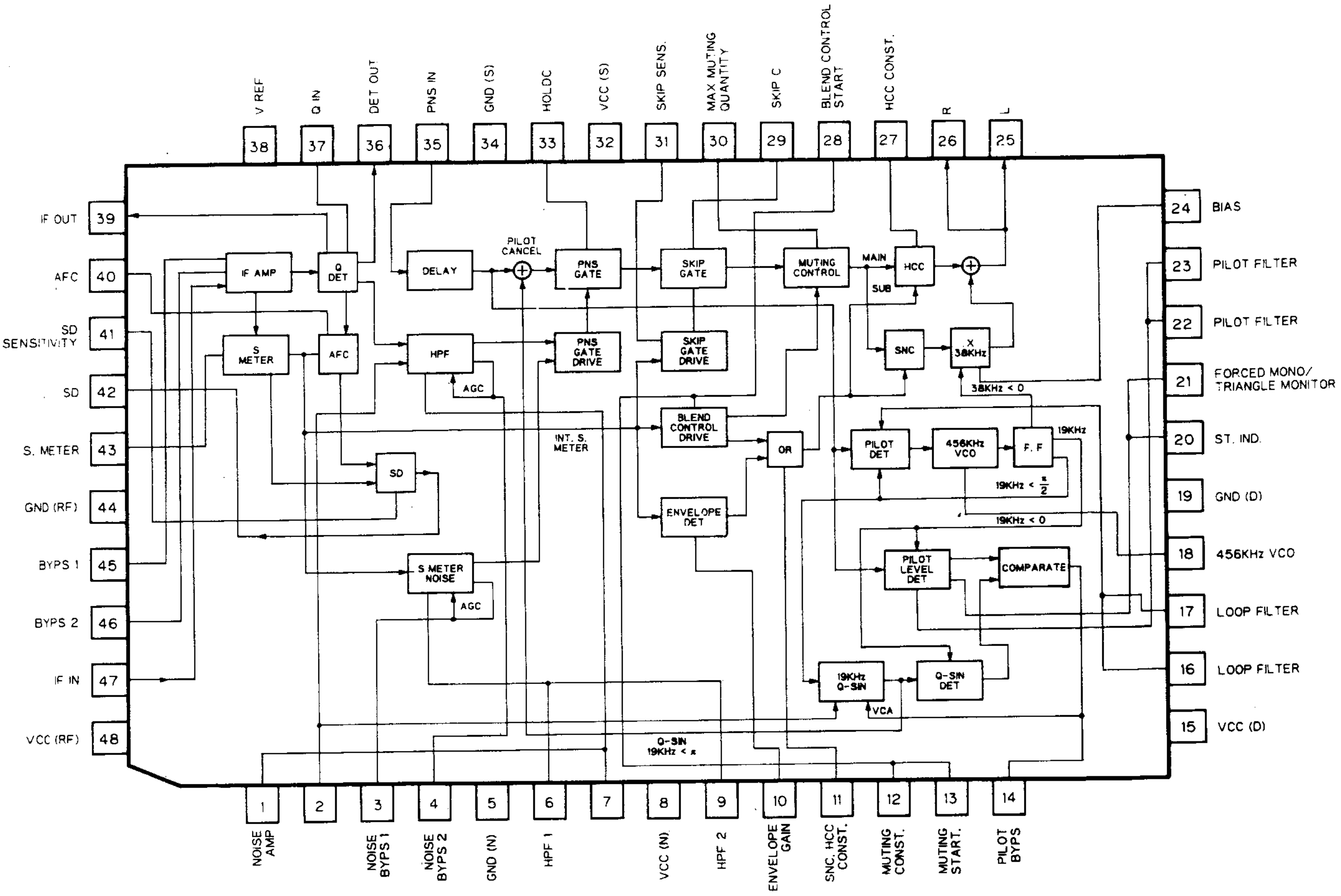
Pin No.	Pin Name	I/O	I/O Format	Function and Operation
1—3	NC			Not used
4	$\overline{\text{BRXEN}}$	I/O	N	Busy input pin
5	$\overline{\text{BSCK}}$	I/O		Serial clock input pin
6	$\overline{\text{BSO}}$	Input		Serial data Input pin
7	$\overline{\text{BST}}$	Input		Serial data input pin
8	NC			GND
9, 10	NC			Not used
11	$\overline{\text{BSENS}}$	Input		Back up power sense input pin
12	NC			GND
13	$\overline{\text{BRST}}$	Input		Bus communication reset input pin
14－20	NC			Not used
21	BSRQ	Output	C	Bus communication service request output pin
22－25	NC			Not used
26	SD	Input		SD signal input pin
27	AMIF	Input		AM IF input pin
28	SL	Input		Signal level input pin
29	$\overline{\text{ST}}$	Input		Stereo broadcast detection signal input pin
30	VDD1			Device power supply terminal
31	AMVCO	Input		AM VCO signal input pin
32	FMVCO	Input		FM VCO signal input pin
33	GND			GND
34	X0	Output		Crystal oscillating element connection pin
35	X1	Input		Crystal oscillating element connection pin
36	EO0	Output	C	PLL error output 0 pin
37	EO1	Output	C	PLL error output 1 pin
38－40	NC			Not used
41	VDD2			Device power supply pin
42	$\overline{\text{MONO}}$	Output	C	Forced mono output pin
43, 44	NC			Not used
45	LOCH	Output	C	Local H setup output pin
46	LOCL	Output	C	Local L setup output pin
47	NC			Not used
48	$\overline{\text{SEEK}}$	Output	C	SEEK output pin Outputs low signal during SEEK operation.
49	NC			Not used
50	$\overline{\text{MUTE1}}$	Output	C	Tuner mute output pin
51, 52	NC			Not used
53	TUNPW	Output	C	Tuner power output pin
54	FM/AM	Output	C	FM/AM power select output pin "H":FM, "L":AM
55－73	NC			Not used
74	KST	Output	C	Strobe output pin
75－77	NC			Not used
78	KIN0	Input	RDW	Return input 0
79, 80	NC			Not used

I/O Format	Meaning
C	CMOS output
N	N channel open drain
RDW	With pull down resistor

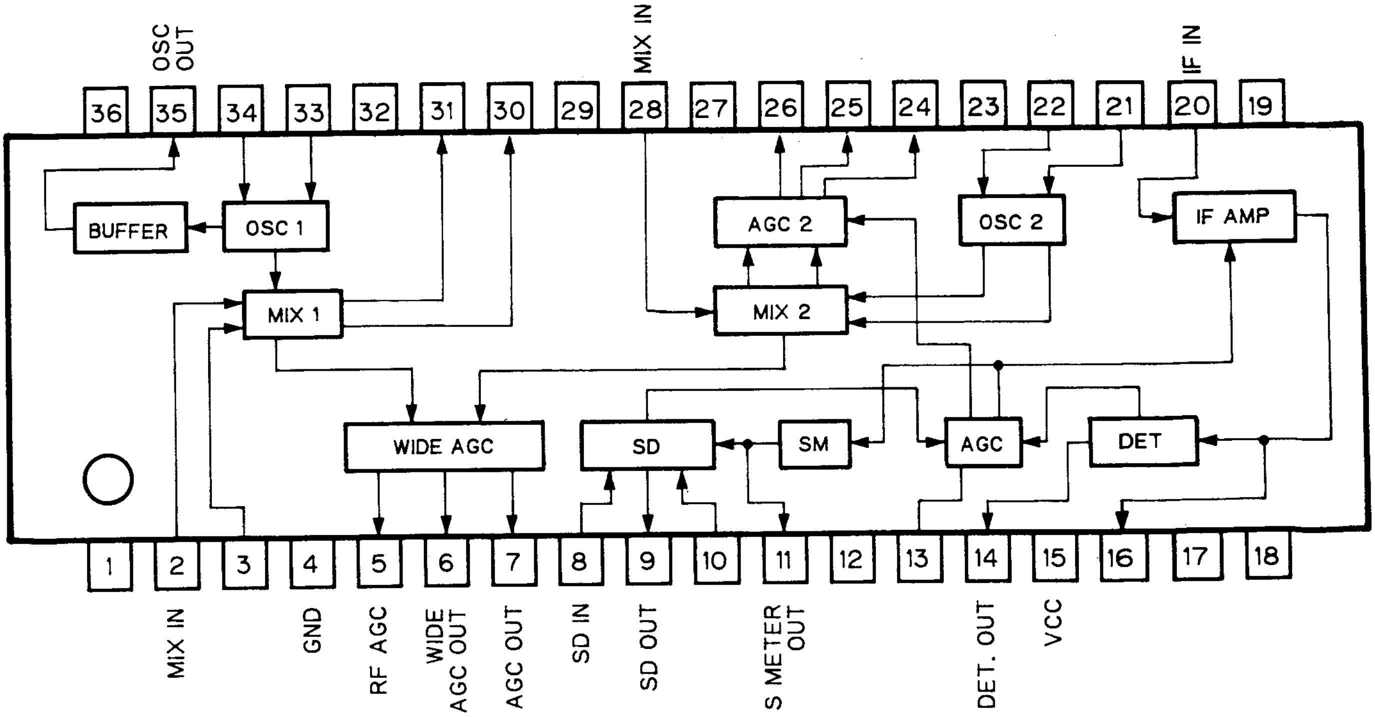
PA3027A


MUTE
MUTE
MUTE
MUTE
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
RL IN
STBY
RL OUT +
RL OUT G
RL OUT -
BATT1
RR OUT +
RR OUT G
RR OUT -
$\overline{\text{MUTE}}$
RR IN
IN GND
FR IN
VCC IN
FR OUT +
FR OUT G
FR OUT -
BATT2
FL OUT +
FL OUT G
FL OUT -
RIPPLE
FL IN

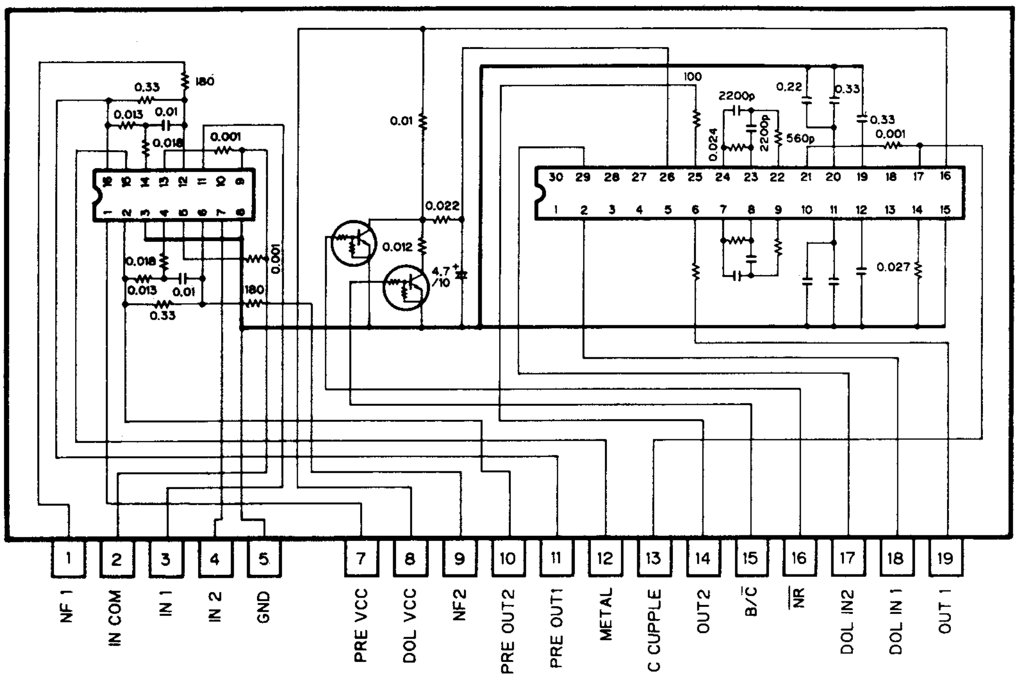
PA4012B


V REF
Q IN
DET OUT
PNS IN
GND (S)
HOLDC
VCC (S)
SKIP SENS.
MAX MUTING QUANTITY
SKIP C
BLEND CONTROL START
HCC CONST.
R
L
38
37
36
35
34
33
32
31
30
29
28
27
26
25
IF OUT
AFC
SD SENSITIVITY
SD
S. METER
GND (RF)
BYPS 1
BYPS 2
IF IN
VCC (RF)
39
40
41
42
43
44
45
46
47
48
24
23
22
21
20
19
18
17
16
15
BIAS
PILOT FILTER
PILOT FILTER
FORCED MONO/ TRIANGLE MONITOR
ST. IND.
GND (D)
456KHz VCO
LOOP FILTER
LOOP FILTER
VCC (D)
IF AMP
Q DET
S METER
AFC
DELAY
PILOT CANCEL
HPF
AGC
PNS GATE
PNS GATE DRIVE
SKIP GATE
SKIP GATE DRIVE
INT. S. METER
BLEND CONTROL DRIVE
ENVELOPE DET
SD
S METER NOISE
AGC
MUTING CONTROL
MAIN
SUB
HCC
SNC
X 38KHz
38KHz < 0
OR
PILOT DET
456KHz VCO
F. F
19KHz
19KHz < π/2
19KHz < 0
PILOT LEVEL DET
COMPARATE
19KHz Q-SIN
Q-SIN DET
VCA
Q-SIN 19KHz < π
1
2
3
4
5
6
7
8
9
10
11
12
13
14
NOISE AMP
NOISE BYPS 1
NOISE BYPS 2
GND (N)
HPF 1
VCC (N)
HPF 2
ENVELOPE GAIN
SNC, HCC CONST.
MUTING CONST.
MUTING START.
PILOT BYPS

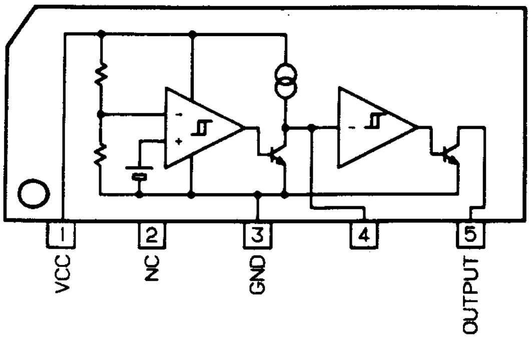
PA4018


OSC OUT
MIX IN
IF IN
36
35
34
33
32
31
30
29
28
27
26
25
24
23
22
21
20
19
BUFFER
OSC 1
MIX 1
AGC 2
MIX 2
OSC 2
IF AMP
WIDE AGC
SD
SM
AGC
DET
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
MIX IN
GND
RF AGC
WIDE AGC OUT
AGC OUT
SD IN
SD OUT
S METER OUT
DET. OUT
VCC

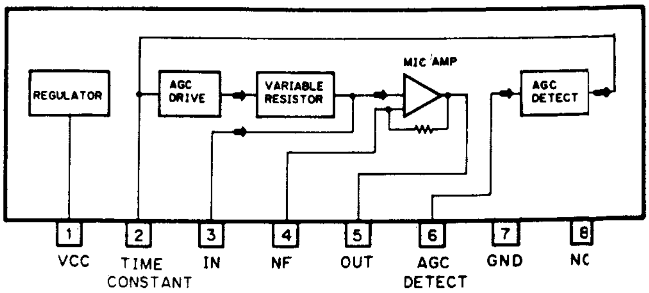
CWV1014


180
0.33
0.013
0.01
0.018
0.001
0.001
0.018
0.013
0.01
0.33
180
0.01
0.022
0.012
4.7/10
100
2200p
0.22
0.33
0.33
0.024
2200p
560p
0.001
0.027
30 29 28 27 26 25 24 23 22 21 20 19 18 17 16
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
1 NF 1
2 IN COM
3 IN 1
4 IN 2
5 GND
7 PRE VCC
8 DOL VCC
9 NF2
10 PRE OUT2
11 PRE OUT1
12 METAL
13 C CUPPLE
14 OUT2
15 B/C̄
16 N̄R̄
17 DOL IN2
18 DOL IN 1
19 OUT 1

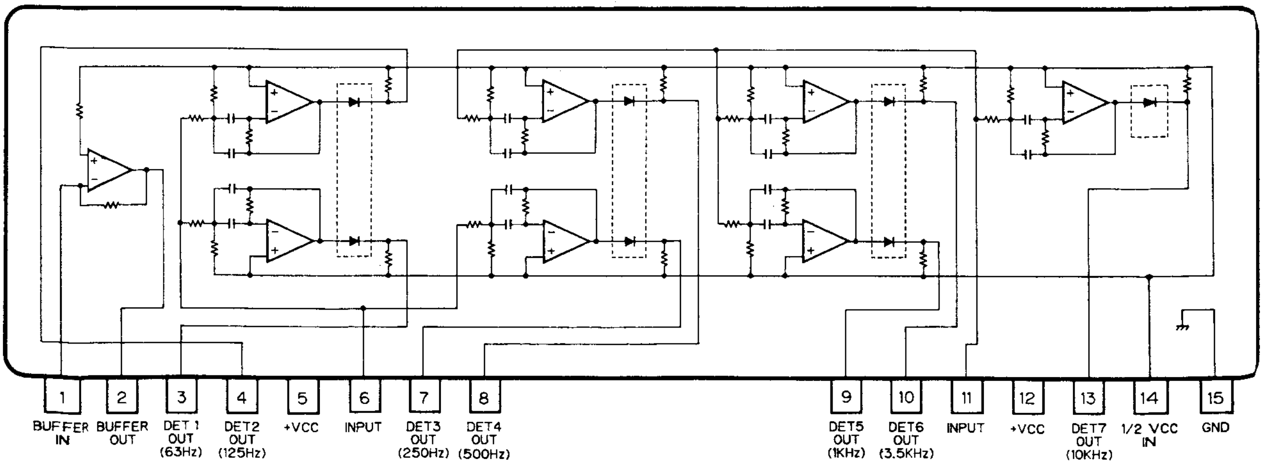
M51953BL


1 VCC
2 NC
3 GND
4
5 OUTPUT

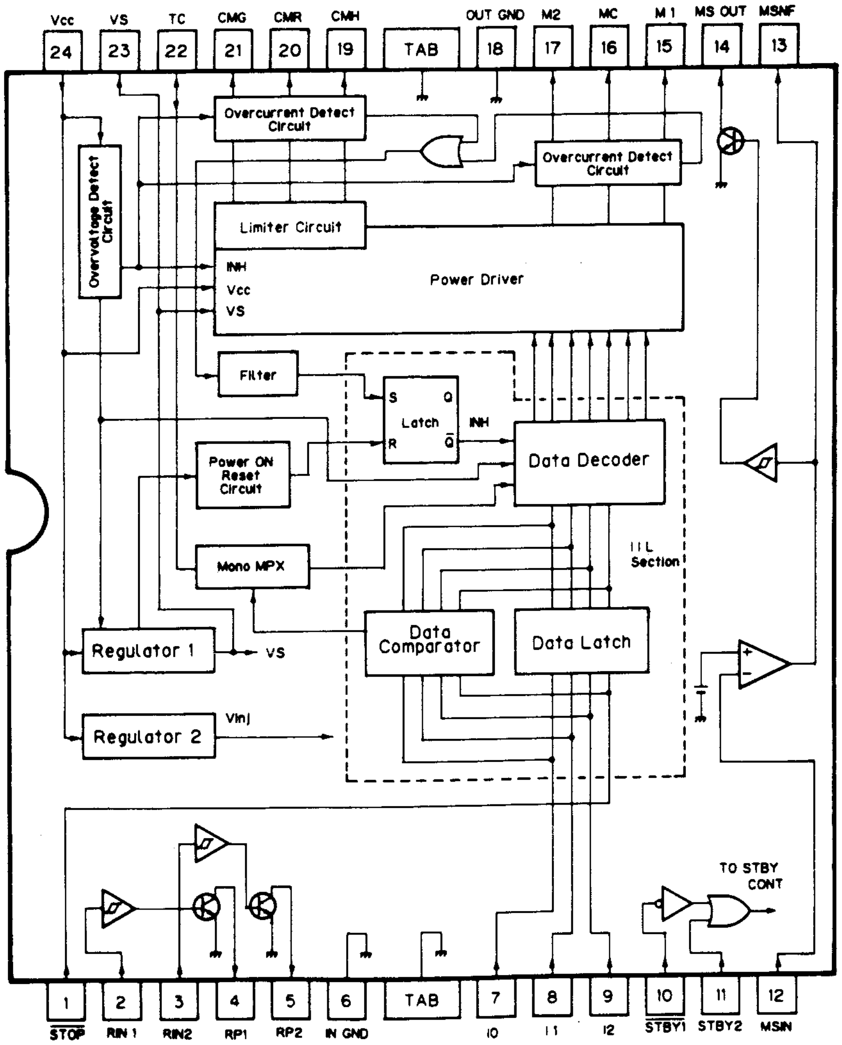
M51304L


REGULATOR
AGC DRIVE
VARIABLE RESISTOR
MIC AMP
AGC DETECT
1 VCC
2 TIME CONSTANT
3 IN
4 NF
5 OUT
6 AGC DETECT
7 GND
8 NC

AFM02F007X2


1 BUFFER IN
2 BUFFER OUT
3 DET 1 OUT (63Hz)
4 DET2 OUT (125Hz)
5 +VCC
6 INPUT
7 DET3 OUT (250Hz)
8 DET4 OUT (500Hz)
9 DET5 OUT (1KHz)
10 DET6 OUT (3.5KHz)
11 INPUT
12 +VCC
13 DET7 OUT (10KHz)
14 1/2 VCC IN
15 GND

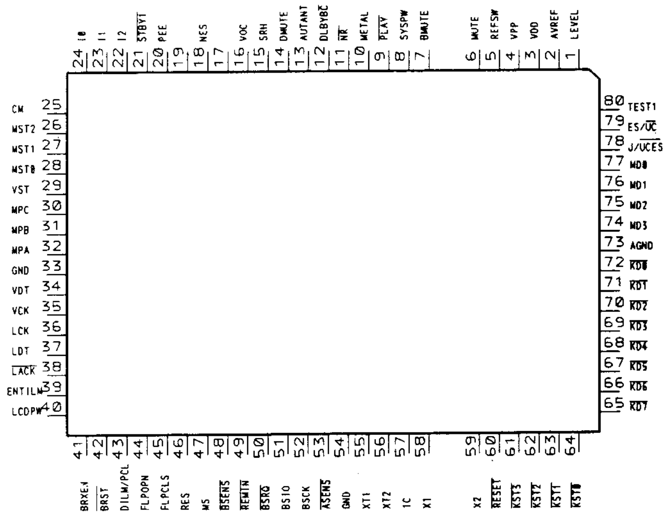
PA3022


Vcc
VS
TC
CMG
CMR
CMH
OUT GND
M2
MC
M 1
MS OUT
MSNF
24
23
22
21
20
19
TAB
18
17
16
15
14
13
Overcurrent Detect Circuit
Overcurrent Detect Circuit
Overvoltage Detect Circuit
Limiter Circuit
INH
Vcc
VS
Power Driver
Filter
S
Q
Latch
R
Q̄
INH
Data Decoder
Power ON Reset Circuit
Mono MPX
I I L Section
Data Comparator
Data Latch
Regulator 1
vs
Regulator 2
Vinj
TO STBY CONT
1
2
3
4
5
6
TAB
7
8
9
10
11
12
STOP
RIN 1
RIN2
RP1
RP2
IN GND
I0
I 1
I2
STBY1
STBY2
MSIN

●Pin Functions (PA3022)(Deck Driver)

Pin No.	Pin Name	I/O	Function and Operation
1	$\overline{\text{STOP}}$	Input	Motor control logic input pin – switches CMH output off at active low.
2	RIN1	Input	Input pin for reel unit rotation sensor (MR1).
3	RIN2	Input	Input pin for reel unit rotation sensor (MR2).
4	RP1	Output	Output pin for wave form signal from reel sensor input 1 (Pin 2).
5	RP2	Output	Output pin for wave form signal from reel sensor input 2 (Pin 3).
6	IN GND	–	Low signal system ground pin.
7	I0	Input	Motor control logic input pin.
8	I1	Input	
9	I2	Input	
10	$\overline{\text{STBY1}}$	Input	Standby control – switches IC power circuit off at active low.
11	STBY2	Input	Standby control – switches IC power circuit off at active high.
12	MSIN	Input	Input pin for MS amp.
13	MSNF	Output/Input	MS amp output and MS Schmitt circuit input.
14	MSOUT	Output	MS Schmitt circuit output – when signal level at MSNF pin exceeds 0dBm, pulse is outputted open when below 0dBm.
15	M1	Output	Drive output "+" pin for head drive motor M1.
16	MC	Output	Drive output common pin for drive motors M1 and M2.
17	M2	Output	Drive output "+" pin for drive motor M2 ("FF/REW" switching gear).
18	OUT GND	–	Motor drive circuit ground pin.
19	CMH	Output	Drive output H (+) pin for capstan motor M3. Output voltage: During speed control: approx. VCC-2V During loading: 7V During eject: 0V
20	CMR	Output	Drive output R pin for capstan motor M3. Output voltage: During speed control: open During loading: 0V During eject: 7V
21	CMG	Output	Drive output GND (–) pin for capstan motor M3. Output voltage: During speed control: 0V During loading and eject: open
22	TC	Output	Pin for capacitor for setting timer to switch power transistor off in a set time when logic inputs 10, 11, 12 change.
23	VS	Output	Power source for reel rotation sensor – approx. 7V.
24	VCC	Input	IC power supply pin.

*PD4344B


24 I0
23 I1
22 I2
21 STBYI
20 PEE
19
18 NES
17
16 VOC
15 SRH
14 DMUTE
13 AUTANT
12 DLBYBC
11 NR
10 METAL
9 PLAY
8 SYSPW
7 BMUTE
6 MUTE
5 REFSW
4 VPP
3 VDD
2 AVREF
1 LEVEL
CM 25
MST2 26
MST1 27
MST0 28
VST 29
MPC 30
MPB 31
MPA 32
GND 33
VDT 34
VCK 35
LCK 36
LDT 37
LACK 38
ENTILM 39
LCDPW 40
41 BRXEN
42 BRST
43 DILM/PCL
44 FLPOPN
45 FLPCLS
46 RES
47 MS
48 BSENS
49 REMTN
50 BSRQ
51 BSIO
52 BSCK
53 ASENS
54 GND
55 XT1
56 XT2
57 IC
58 X1
59 X2
60 RESET
61 KST3
62 KST2
63 KST1
64 KST0
80 TEST1
79 ES/UC
78 J/UCES
77 MD0
76 MD1
75 MD2
74 MD3
73 AGND
72 KD0
71 KD1
70 KD2
69 KD3
68 KD4
67 KD5
66 KD6
65 KD7

- Pin Functions(PD4344B)

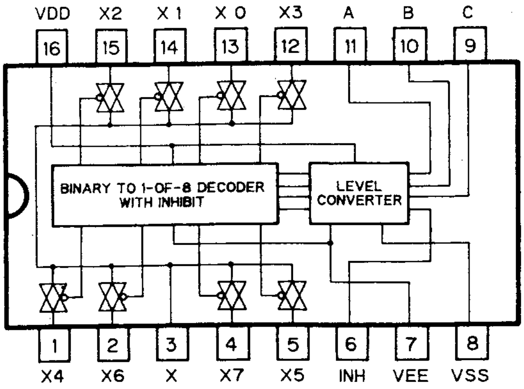
Pin No.	Pin Name	I/O	I/O Format	Function and Operation
1	LEVEL	Input		Spectrum analyzer analogue data input pin
2	AVREF	Input		A/D converter reference input pin
3	VDD			
4	VDD(VPP)			
5	REFSW	Output	C	A/D reference control output pin
6	MUTE	Output	C	Mute output pin
7	BMUTE	Output	C	Bus mute
8	SYSPW	Output	C	System (power amp) power output pin (BTB)
9	PLAY	Output	C	MS filter switching output pin
10	METAL	Output	C	METAL output pin
11	NR	Output	C	Noise reduction output pin
12	DLBYBC	Output	C	DOLBY B/C switching output pin
13	AUTANT	Output	C	Auto antenna output pin
14	DMUTE	Output	C	Intercept deck mute
15	SRH	Output	C	Surround control output pin
16	VOC	Output	C	Voice canceler control output pin
17		Input		
18	NES	Input		Normal END sense input pin
19				
20	PEE	Output	C	PEE sound oscillating output pin
21	STBYI	Output	C	Stand-by control data output pin
22	I2	Output	C	Control data output pin
23	I1	Output	C	Control data output pin
24	I0	Output	C	Control data output pin
25	CM	Output	C	Capstan motor control output pin H:ON, L:OFF

26	MST2	Output	C	Mechanism switch strobe output pin
27	MST1	Output	C	Mechanism switch strobe output pin
28	MST0	Output	C	Mechanism switch strobe output pin
29	VST	Output	OD	Electric volume strobe output pin
30	MPC	Output	OD	Spectrum analyzer multiplexer control C output pin
31	MPB	Output	OD	Spectrum analyzer multiplexer control B output pin
32	MPA	Output	OD	Spectrum analyzer multiplexer control A output pin
33	GND			
34	VDT	Output	OD	Electric volume data output pin
35	VCK	Output	OD	Electric volume clock output pin
36	LCK	Output	OD	LCD driver clock output pin
37	LDT	Output	OD	LCD driver data output pin
38	$\overline{\text{LACK}}$	Input		LCD driver Ack input pin
39	ENTILM	Output	C	Entertainment mixing output pin
40	LCDPW	Output	C	LCD regulator control
41	BRXEN	I/O	C	Reception enable input / output pin
42	$\overline{\text{BRST}}$	Output	C	Terminal reset output pin
43	DILM/PCL	Output	C	Flap solenoid output pin / Clock adjust pulse output pin
44	FLPOPN	Output	C	Flap motor open output pin
45	FLPCLS	Output	C	Flap motor close output pin
46	RES	Input		Reverse END sense input pin
47	MS	Input		Music pulse input pin
48	$\overline{\text{BSENS}}$	Input		Backup sense input pin H:BACKUP DOWN
49	$\overline{\text{REMIN}}$	Input		Remote control input pin
50	$\overline{\text{BSRQ}}$	Input		Communication request input pin
51	BSIO	I/O	C	Communication data input / output pin
52	BSCK	I/O	C	Communication serial clock input / output pin
53	$\overline{\text{ASENS}}$	Input		Acc sense input pin H:ACC DOWN
54	GND			
55	XT1			
56	XT2			
57	IC			
58	X1			
59	X2			
60	$\overline{\text{RESET}}$			
61	$\overline{\text{KST3}}$	Output	OD	Key strobe output pin
62	$\overline{\text{KST2}}$	Output	OD	Key strobe output pin
63	$\overline{\text{KST1}}$	Output	OD	Key strobe output pin
64	$\overline{\text{KST0}}$	Output	OD	Key strobe output pin
65	$\overline{\text{KD7}}$	Input		Key return input pin

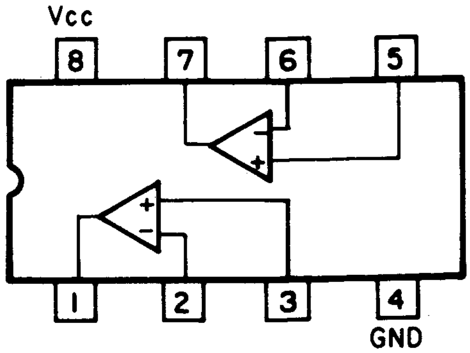
66	$\overline{\text{KD6}}$	Input		Key return input pin
67	$\overline{\text{KD5}}$	Input		Key return input pin
68	$\overline{\text{KD4}}$	Input		Key return input pin
69	$\overline{\text{KD3}}$	Input		Key return input pin
70	$\overline{\text{KD2}}$	Input		Key return input pin
71	$\overline{\text{KD1}}$	Input		Key return input pin
72	$\overline{\text{KD0}}$	Input		Key return input pin
73	AGND			
74	MD3	Input		Mechanism return input pin
75	MD2	Input		Mechanism return input pin
76	MD1	Input		Mechanism return input pin
77	MD0	Input		Mechanism return input pin
78	J/$\overline{\text{UCES}}$	Input		J / $\overline{\text{UCES}}$ select input pin
79	ES/$\overline{\text{UC}}$	Input		ES / $\overline{\text{UC}}$ select input pin
80	TEST1	Input		Test program input pin

I/O Format	Meaning
C	CMOS output
OD	Open drain

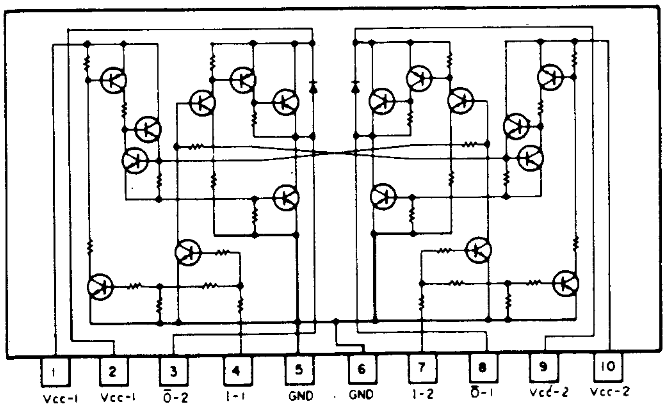
*MC14051BF


VDD
X2
X1
X0
X3
A
B
C
16
15
14
13
12
11
10
9
BINARY TO 1-OF-8 DECODER WITH INHIBIT
LEVEL CONVERTER
1
2
3
4
5
6
7
8
X4
X6
X
X7
X5
INH
VEE
VSS

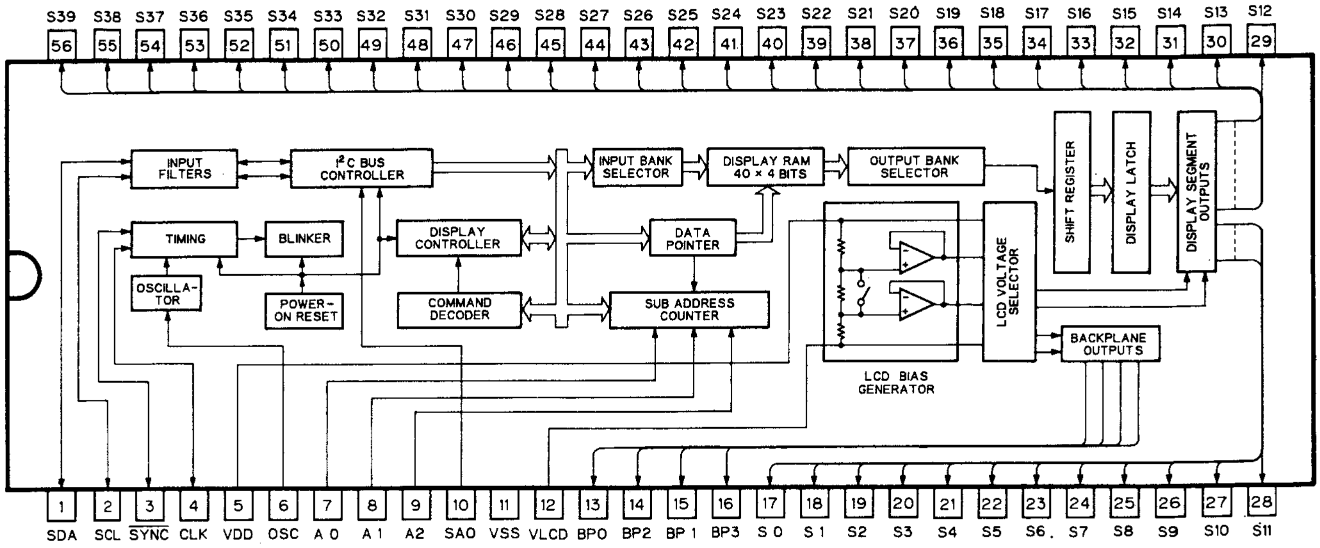
HA17358F


Vcc
8
7
6
5
1
2
3
4
GND

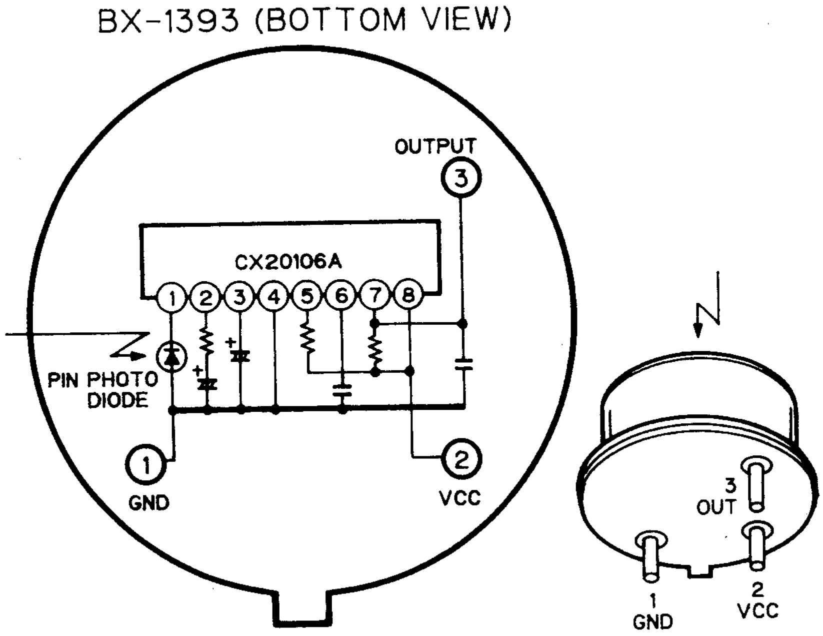
M54546AL


1
2
3
4
5
6
7
8
9
10
Vcc-1
Vcc-1
Ō-2
I-1
GND
GND
I-2
Ō-1
Vcc-2
Vcc-2

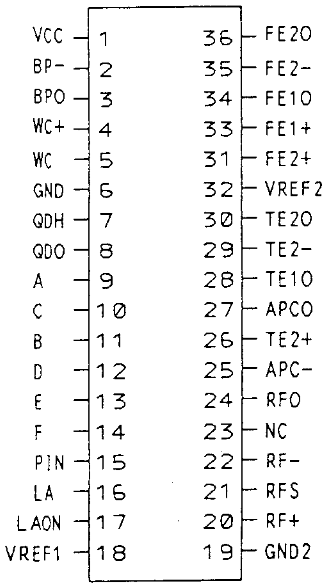
*PCF8576T


S39 56
S38 55
S37 54
S36 53
S35 52
S34 51
S33 50
S32 49
S31 48
S30 47
S29 46
S28 45
S27 44
S26 43
S25 42
S24 41
S23 40
S22 39
S21 38
S20 37
S19 36
S18 35
S17 34
S16 33
S15 32
S14 31
S13 30
S12 29
INPUT FILTERS
I²C BUS CONTROLLER
INPUT BANK SELECTOR
DISPLAY RAM 40 × 4 BITS
OUTPUT BANK SELECTOR
SHIFT REGISTER
DISPLAY LATCH
DISPLAY SEGMENT OUTPUTS
TIMING
BLINKER
DISPLAY CONTROLLER
DATA POINTER
OSCILLA-TOR
POWER-ON RESET
COMMAND DECODER
SUB ADDRESS COUNTER
LCD VOLTAGE SELECTOR
BACKPLANE OUTPUTS
LCD BIAS GENERATOR
1 SDA
2 SCL
3 SYNC
4 CLK
5 VDD
6 OSC
7 A 0
8 A 1
9 A2
10 SAO
11 VSS
12 VLCD
13 BPO
14 BP2
15 BP 1
16 BP3
17 S 0
18 S 1
19 S2
20 S3
21 S4
22 S5
23 S6
24 S7
25 S8
26 S9
27 S10
28 S11

BX-1393


BX-1393 (BOTTOM VIEW)
OUTPUT ③
CX20106A
① ② ③ ④ ⑤ ⑥ ⑦ ⑧
PIN PHOTO DIODE
① GND
② VCC
3 OUT
1 GND
2 VCC

IC351:UPC1347GS


VCC 1
BP- 2
BPO 3
WC+ 4
WC 5
GND 6
QDH 7
QDO 8
A 9
C 10
B 11
D 12
E 13
F 14
PIN 15
LA 16
LAON 17
VREF1 18
36 FE2O
35 FE2-
34 FE1O
33 FE1+
31 FE2+
32 VREF2
30 TE2O
29 TE2-
28 TE1O
27 APCO
26 TE2+
25 APC-
24 RFO
23 NC
22 RF-
21 RFS
20 RF+
19 GND2

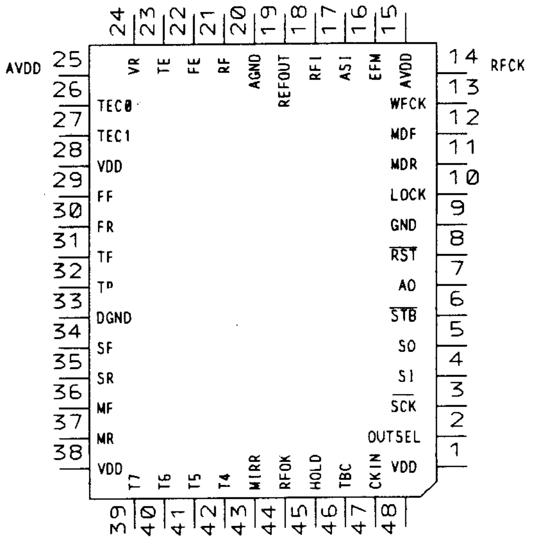
● Pin Functions (UPC1347GS)

Pin No	Pin Name	I/O	Function and Operation
1	VCC		
2	BP-	Input	Vibration detect amplifier 1 inverter input
3	BPO	Output	Vibration detect amplifier 1 output
4	WC+	Input	Window comparator non-inverting input
5	WC-	Input	Window comparator inverter input
6	GND		GND
7	QDH	Input	Vibration detect amplifier 3 non-inverting input
8	QDO	Output	Vibration detect amplifier 3 output
9	A	Input	A signal input
10	C	Input	C signal input
11	B	Input	B signal input
12	D	Input	D signal input
13	E	Input	E signal input
14	F	Input	F signal input
15	PIN	Input	APC circuit PD amplifier input
16	LA	Output	APC circuit LD amplifier output
17	LAON		Laser diode ON/OFF switching
18	VREF1		Reference voltage
19	GND2		GND
20	RF+	Input	RF amplifier non-inverting input
21	RFS	Output	RF summing virtual output
22	RF-	Input	RF amplifier inverter input
23	NC		
24	RFO	Output	RF amplifier output
25	APC-	Input	APC circuit PD amplifier inverter input
26	TE2+	Input	Tracking error amplifier 2 non-inverting input
27	APCO	Output	APC circuit PD amplifier output
28	TE1O	Output	Tracking error amplifier 1 output
29	TE2-	Input	Tracking error amplifier 2 inverter input
30	TE2O	Output	Tracking error amplifier 2 output
31	VREF2		Reference voltage
32	FE2+	Input	Focus error amplifier 2 non-inverting input
33	FE1+	Input	Focus error amplifier 1 non-inverting input
34	FE1O	Output	Focus error amplifier 1 output
35	FE2-	Input	Focus error amplifier 2 inverter input
36	FE2O	Output	Focus error amplifier 2 output

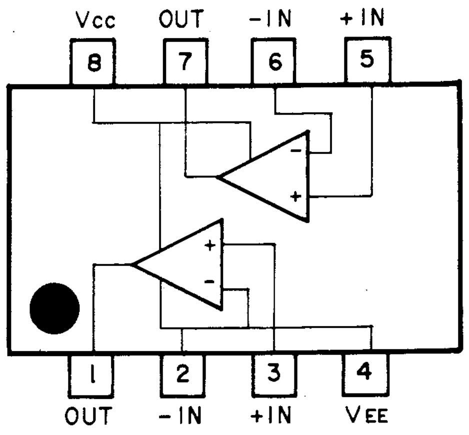
● Pin Functions (UPD6374GH)

Pin No	Pin Name	I/O	Function and Operation
1	VDD		Positive power supply terminal for logic circuit
2	OUTSEL	Input	Sets PWM output mode for the motor system
3	$\overline{SCK}$	Input	Clock input terminal for serial date input and output
4	SI	Input	Serial date input
5	SO	Output	serial date and status signal output
6	$\overline{STB}$	Input	Signal latching serial data inside LSI
7	AO	Input	Used in combination with $\overline{STB}$ AO = "L" : Set in address register when $\overline{STB}$ is active AO = "H" : Parameter setting when $\overline{STB}$ is active
8	$\overline{RST}$	Input	System reset
9	DGND		Logic circuit GND
10	LOCK	Input	Input terminals for detection of spindle servo error signals
11	MDR	Input	
12	MDF	Input	
13	WFCK	Input	
14	RFCK	Input	
15	AVDD		Positive power supply terminal for analog circuit
16	EFM	Output	EFM signal output terminal
17	ASI	Input	Level comparing input terminal for RF signal comparison
18	RFI	Input	Analog input terminal for EFM comparator
19	REFOUT	Output	A/D converter midpoint output terminal inside LSI
20	AGND		Analog circuit GND
21	RF	Output	RF signal input terminal
22	FE	Input	Focus error input terminal
23	TE	Input	Tracking error input terminal
24	VR	Input	Input signal is quantified as follows : Fs=88.2KHz, Resolution : 6 bits The output takes place directly at microcomputer interface, that is, not via the filter block within LSI.
25	AVDD		Positive power supply terminal for analog circuit
26	TECO	Input	Tracking comparator input terminal
27	TECI	Input	
28	DVDD		Positive power supply terminal for logic circuit
29	FF	Output	PWM positive output terminal for the focus loop filter
30	FR	Output	PWM negative output terminal for the focus loop filter
31	TF	Output	PWM positive output terminal for the tracking loop filter
32	TR	Output	PWM negative output terminal for the tracking loop filter
33	DGND		Logic circuit GND terminal
34	SF	Output	PWM positive output terminal for the thread loop filter
35	SR	Output	PWM negative output terminal for the thread loop filter
36	MF	Output	PWM positive output terminal for the spindle loop filter
37	MR	Output	PWM negative output terminal for the spindle loop filter
38	DVDD		Positive power supply terminal for logic circuit
39	T7	Input	Sets tracking PWM output mode
40	T6	Input	Sets focus PWM output mode
41	T5	Input	Selects motor modulation mode
42	T4	Input	Selects between focus and tracking modulation modes
43	MIRR	Output	MIRR detection signal output terminal
44	RFOK	Output	RFOK detection signal output terminal
45	HOLD	Input	Hold control signal input terminal
46	TBC		Tracking bank switching terminal
47	CKIN	Input	System clock input terminal
48	$\overline{TEST}$	Input	Test terminal

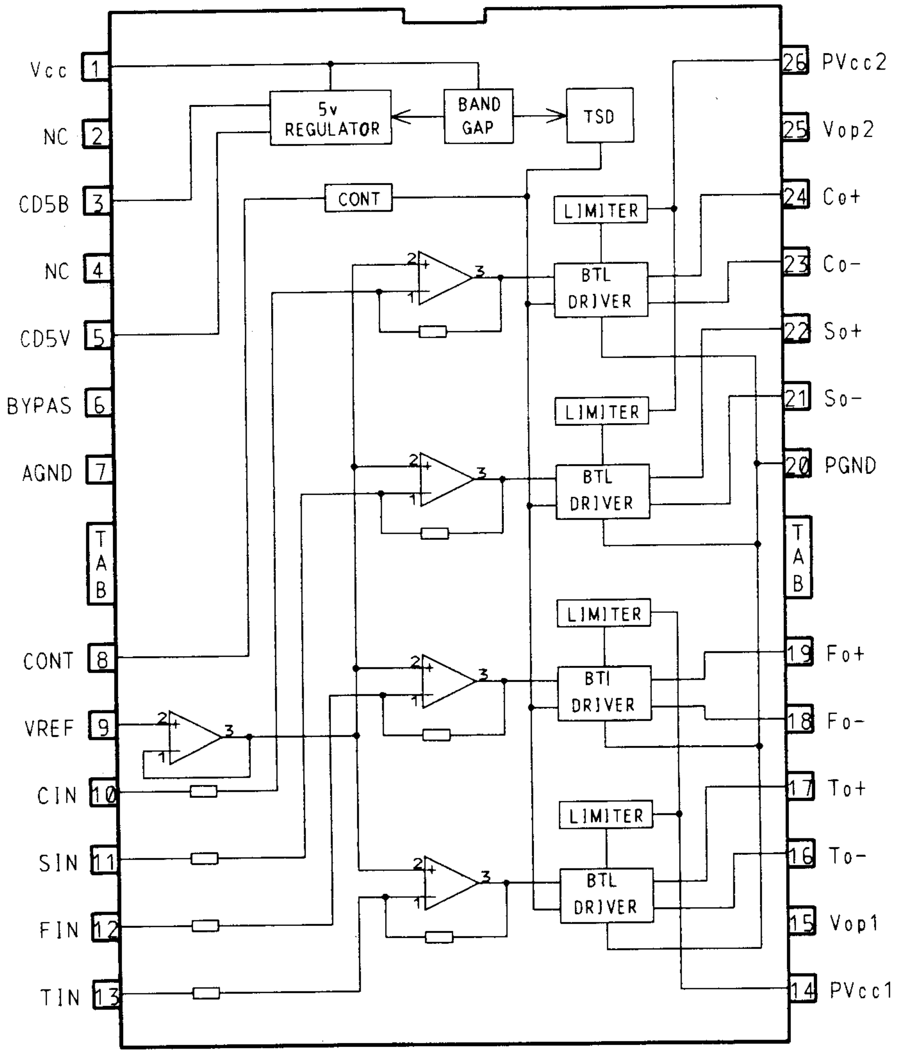
UPD6374GH


AVDD
RFCK
VR
TE
FE
RF
AGND
REFOUT
RFI
ASI
EFM
AVDD
TEC0
TEC1
VDD
FF
FR
TF
TP
DGND
SF
SR
MF
MR
VDD
T7
T6
T5
T4
MIRR
RFOK
HOLD
TBC
CKIN
VDD
WFCK
MDF
MDR
LOCK
GND
RST
A0
STB
S0
S1
SCK
OUTSEL
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48

RC4558M
M5218FP


Vcc
OUT
-IN
+IN
8
7
6
5
1
2
3
4
OUT
-IN
+IN
VEE

PA3026

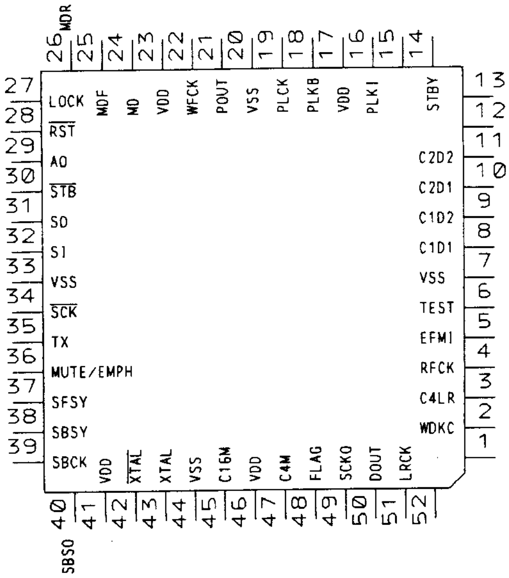

Vcc 1
NC 2
CD5B 3
NC 4
CD5V 5
BYPAS 6
AGND 7
TAB
CONT 8
VREF 9
CIN 10
SIN 11
FIN 12
TIN 13
26 PVcc2
25 Vop2
24 Co+
23 Co-
22 So+
21 So-
20 PGND
TAB
19 Fo+
18 Fo-
17 To+
16 To-
15 Vop1
14 PVcc1
5v REGULATOR
BAND GAP
TSD
CONT
LIMITER
BTL DRIVER
LIMITER
BTL DRIVER
LIMITER
BTl DRIVER
LIMITER
BTL DRIVER

• Pin Functions (UPD6375GC)

Pin No	Pin Name	I/O	Function and Operation
1	NC		
2	WDCK	Output	Output terminal for signal having double the frequency of LRCK
3	C4LR	Output	Output terminal for signal having four the frequency of LRCK
4	RFCK	Output	Oscillation clock divider signal, output terminal for signal giving one-frame synchronization
5	EFMI	Input	EFM signal input terminal
6	TEST		TEST
7	VSS		GND
8	C1D1	Output	Output terminal indicating C1 error correction status
9	C1D2	Output	
10	C2D1	Output	Output terminal indicating C2 error correction status
11	C2D2	Output	
12, 13	NC		
14	STBY	Input	Standby input terminal. STBY=H stops clock oscillation
15	NC		
16	PLK1	Output	VCO output terminal for use in analog PLL selection
17	VDD		VDD
18	PLK8	Input	VCO clock input terminal for use in analog PLL selection
19	PLCK	Output	Bit clock monitor terminal
20	VSS		GND
21	POUT	Output	Output terminal for phase comparison between EFM signal and bit clock
22	WFCK	Output	Signal issuring one-frame period (approximately 7.35kHz) by bit clock dividing signal
23	VDD		5 V
24	MD	Output	Signal indicating spindle motor CLV servo control output status
25	MDF	Output	Spindle motor CLV servo control positive direction output terminal
26	MDR	Output	Spindle motor CLV servo control negative direction output terminal
27	LOCK	Output	Becomes "H" when the synchronization signal and frame counter output coincide at EFM demodulator
28	$\overline{\text{RST}}$	Input	Reset signal input terminal
29	A0	Input	Control signal distinguishing data from microcomputer
30	$\overline{\text{STB}}$	Input	Signal latching within this LSI the serial data fetched from SI terminal
31	SO		Serial data input terminal
32	SI	Input	Input terminal fro data from microcomputer
33	VSS		GND
34	$\overline{\text{SCK}}$	Input	Clock input terminal for serial data input
35	TX	Output	Digital audio interface data output terminal
36	MUTE/EMPH	Output	Output terminal for mute command decoding signal or sub-Q command pre-emphasis data
37	SFSY	Output	Signal indicating subcode one-frame synchronization
38	SBSY	Output	Signal indicating head of subcode block
39	SBCK	Input	Subcode data read clock input terminal
40	SBSO	Output	Subcode data output terminal
41	VDD		5 V
42	$\overline{\text{XTAL}}$	Output	Oscillation continuation terminal
43	XTAL	Input	Oscillation continuation terminal

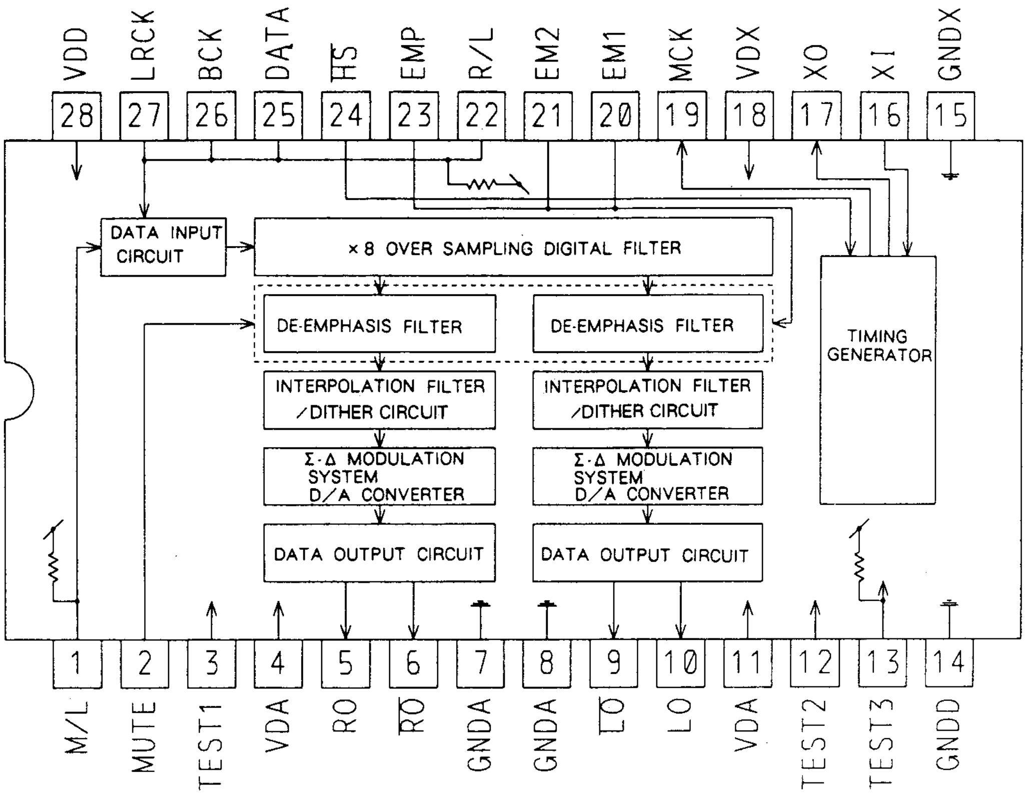
Pin No	Pin Name	I/O	Function and Operation
44	VSS		GND
45	C16M	Output	Oscillation clock output terminal
46	VDD		5 V
47	C4M	Output	1/4 cycle output terminal for oscillation clock signals
48	FLAG	Output	Flag signal indicating that the current audio data output consists of incorrectable data
49	SCKO	Output	Clock output terminal for audio serial data
50	DOUT	Output	Serial audio data output terminal
51	LRCK	Output	Signal distinguishing between left and right channel DOUT terminal output
52	NC		

UPD6375GC

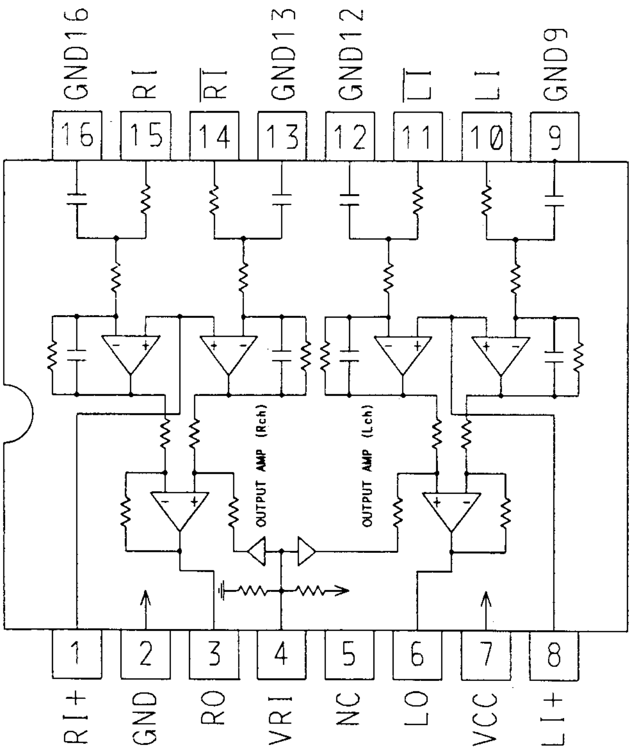


MDR
26
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
27
28
29
30
31
32
33
34
35
36
37
38
39
LOCK
MDF
MD
VDD
WFCK
POUT
VSS
PLCK
PLKB
VDD
PLKI
STBY
RST
A0
STB
S0
S1
VSS
SCK
TX
MUTE/EMPH
SFSY
SBSY
SBCK
C2D2
C2D1
C1D2
C1D1
VSS
TEST
EFMI
RFCK
C4LR
WDKC
VDD
XTAL
XTAL
VSS
C16M
VDD
C4M
FLAG
SCKO
DOUT
LRCK
40
41
42
43
44
45
46
47
48
49
50
51
52
SBSO

TC9237F


VDD
LRCK
BCK
DATA
$\overline{\text{HS}}$
EMP
R/L
EM2
EM1
MCK
VDX
XO
XI
GNDX
28
27
26
25
24
23
22
21
20
19
18
17
16
15
DATA INPUT CIRCUIT
×8 OVER SAMPLING DIGITAL FILTER
DE-EMPHASIS FILTER
DE-EMPHASIS FILTER
TIMING GENERATOR
INTERPOLATION FILTER /DITHER CIRCUIT
INTERPOLATION FILTER /DITHER CIRCUIT
Σ-Δ MODULATION SYSTEM D/A CONVERTER
Σ-Δ MODULATION SYSTEM D/A CONVERTER
DATA OUTPUT CIRCUIT
DATA OUTPUT CIRCUIT
1
2
3
4
5
6
7
8
9
10
11
12
13
14
M/L
MUTE
TEST1
VDA
RO
$\overline{\text{RO}}$
GNDA
GNDA
$\overline{\text{LO}}$
LO
VDA
TEST2
TEST3
GNDD

TA2009F


GND16
RI
$\overline{\text{RI}}$
GND13
GND12
$\overline{\text{LI}}$
LI
GND9
16
15
14
13
12
11
10
9
OUTPUT AMP (Rch)
OUTPUT AMP (Lch)
1
2
3
4
5
6
7
8
RI+
GND
RO
VRI
NC
LO
VCC
LI+

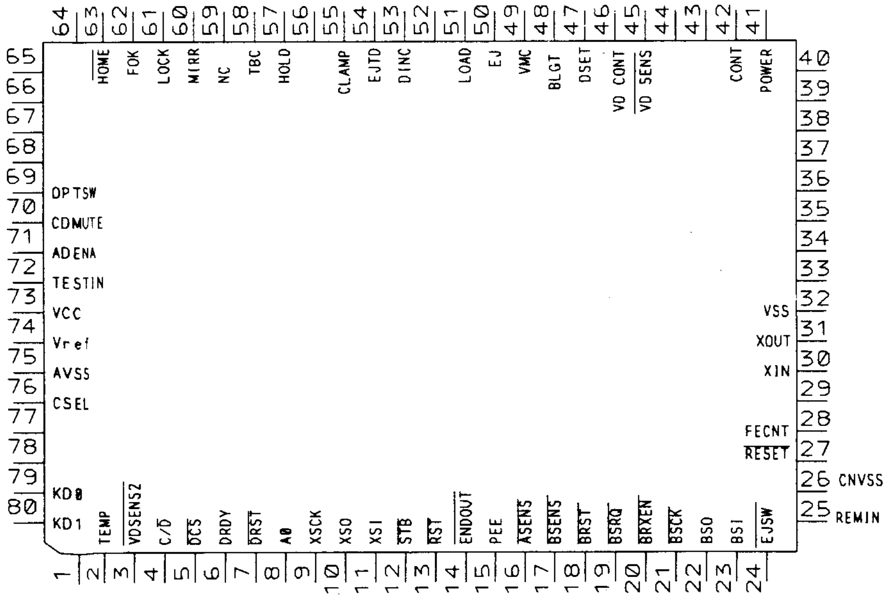
● Pin Functions (PD5156C)

Pin No.	Pin Name	I/O	I/O Format	Function and Operation
1	NC			Not used
2	TEMP			Temperature detector
3	$\overline{\text{VDSENSE2}}$			Short sense input
4	DCD	Output	NM	Command/data appointment output
5	$\overline{\text{DCS}}$	Output	NM	Chip select output
6	DRDY	Input		Ready input
7	$\overline{\text{DRST}}$	Output	NM	Reset output
8	A0	Output	NM	LSI data control signal
9	XSCK	Output	NM	LSI clock output
10	XSO	Output	NM	LSI data output
11	XSI	Input	NM	LSI data input
12	$\overline{\text{STB}}$	Output	C	LSI strobe output
13	$\overline{\text{RST}}$	Output	C	Reset output pin
14	$\overline{\text{ENDOUT}}$	Output	C	Digital output enable signal
15	PEE	Output	C	Beep tone output
16	$\overline{\text{ASENS}}$	Input		ACC power sense input pin
17	$\overline{\text{BSENS}}$	Input		Back up power sense input pin
18	$\overline{\text{BRST}}$	Input		Bus communication reset input pin
19	$\overline{\text{BSRQ}}$	Output	C	Bus communication service request output pin
20	$\overline{\text{BRXEN}}$	Input/Output	C	Bus communication reception enable input pin
21	$\overline{\text{BSCK}}$	Input/Output	C	Bus serial clock input/output
22	BSO	Output	C	Serial data output pin
23	BSI	Input		Bus serial data input
24	$\overline{\text{EJSW}}$	Input		Eject signal input
25	REMIN	Input		Remote control pulse input
26	CNVSS			Gnd
27	$\overline{\text{RESET}}$	Input		Reset input
28	FECNT	Output	C	
29	NC			Not used
30	XIN	Input		Crystal oscillating element connection pin
31	XOUT	Output	C	Crystal oscillating element connection pin
32	VSS			GND
33－40	NC			Not used
41	POWER	Output	C	CD +5V control
42	CONT	Output	C	Servo driver power supply control
43, 44	NC			Not used
45	$\overline{\text{VDSENS}}$	Input		Over voltage sense input
46	VDCONT	Output	C	VD control output
47	DSET	Output	C	Disc set indicator control output
48	BLGT	Output	C	LCD back light control output
49	VMC	Output	C	Loading motor driver power supply
50	EJ	Output	C	Loading motor EJECT control
51	LOAD	Output	C	Loading motor LOAD control
52	NC			Not used
53	DINC	Input		Disc insert sense input
54	EJTD	Input		Disc eject position sense input "H":FM, "L":AM
55	CLAMP	Input		Disc clamp sense input
56	NC			Not used

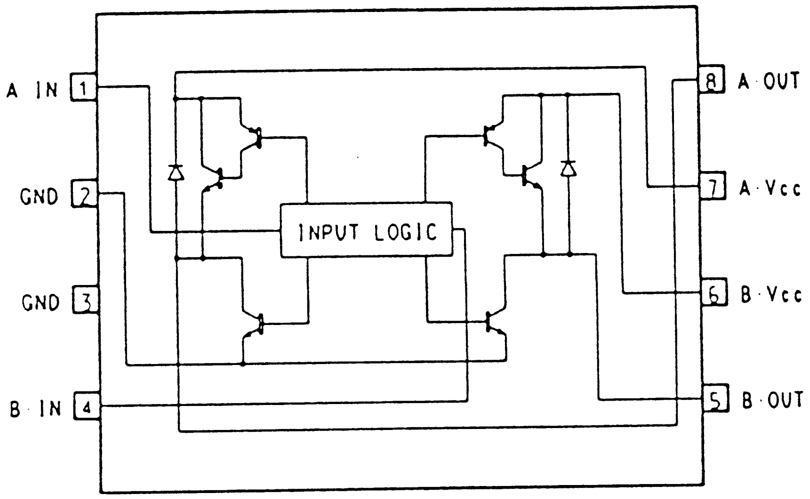
Pin No.	Pin Name	I/O	I/O Format	Function and Operation
57	HOLD	Output	C	Hold control output
58	TBC	Output	C	Tracking bank switching output
59	NC			Not used
60	MIRR	Input		Mirror detector input
61	LOCK	Input		Spindle lock detector input
62	FOK	Input		FOK signal input
63	$\overline{\text{HOME}}$	Input		Home position detector input
64-68	NC			Not used
69	OPTSW	Input		Digital output ON/OFF input
70	CDMUTE	Output	C	CD mute output
71	ADENA	Output	C	A/D reference voltage output
72	TESTIN	Input		Test program mode input
73	VCC			Back up 5V
74	VREF	Input		A/D reference voltage input
75	AVSS			A/D GND
76	CSEL			Compression select
77,78	NC			Not used
79	KD0			Analog key input 0
80	KD1			Analog key input 1

I/O Format	Meaning
C	CMOS output
NM	Middle resistivity N channel open drain

*PD5156C


HOME
FOK
LOCK
MIRR
NC
TBC
HOLD
CLAMP
EJTD
DINC
LOAD
EJ
VMC
BLGT
DSET
VD CONT
VD SENS
CONT
POWER
OPTSW
CDMUTE
ADENA
TESTIN
VCC
Vref
AVSS
CSEL
KD0
KD1
VSS
XOUT
XIN
FECNT
RESET
CNVSS
REMIN
TEMP
VDSENS2
C/D
DCS
DRDY
DRST
A0
XSCK
XSO
XSI
STB
RST
ENDOUT
PEE
ASENS
BSENS
BRST
BSRQ
BRXEN
BSCK
BSO
BSI
EJSW

MB3854PF


A IN
1
GND
2
GND
3
B IN
4
INPUT LOGIC
8
A OUT
7
A·Vcc
6
B·Vcc
5
B·OUT

• FM Front End (CWB1063)

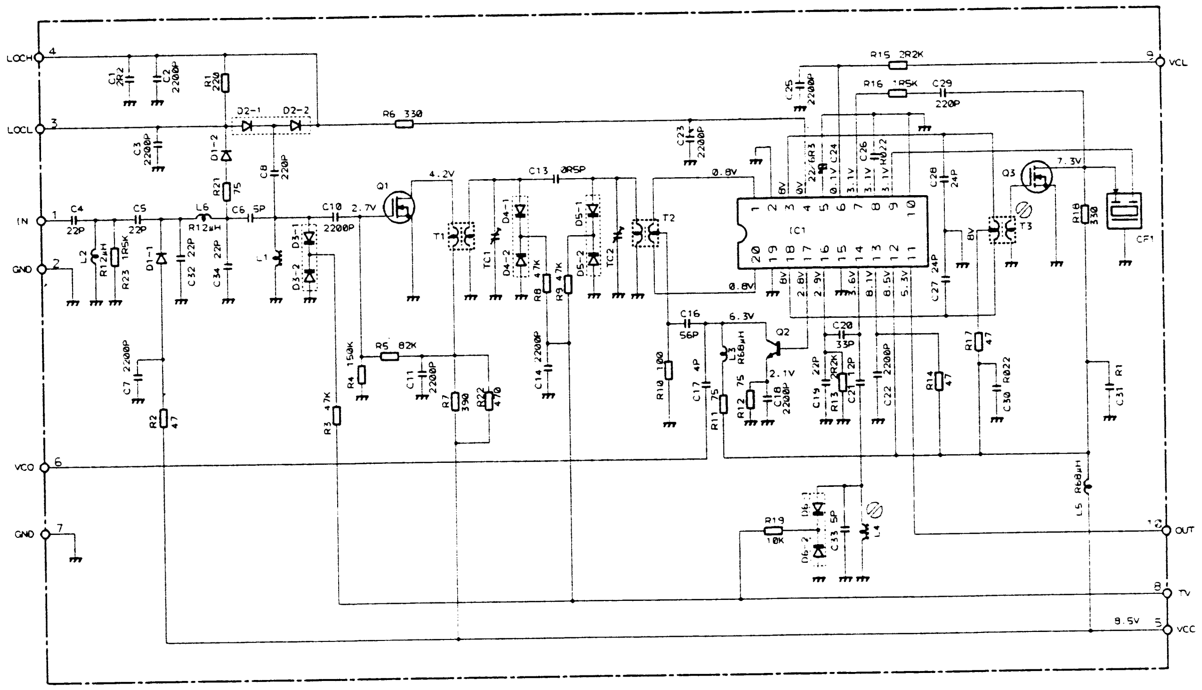
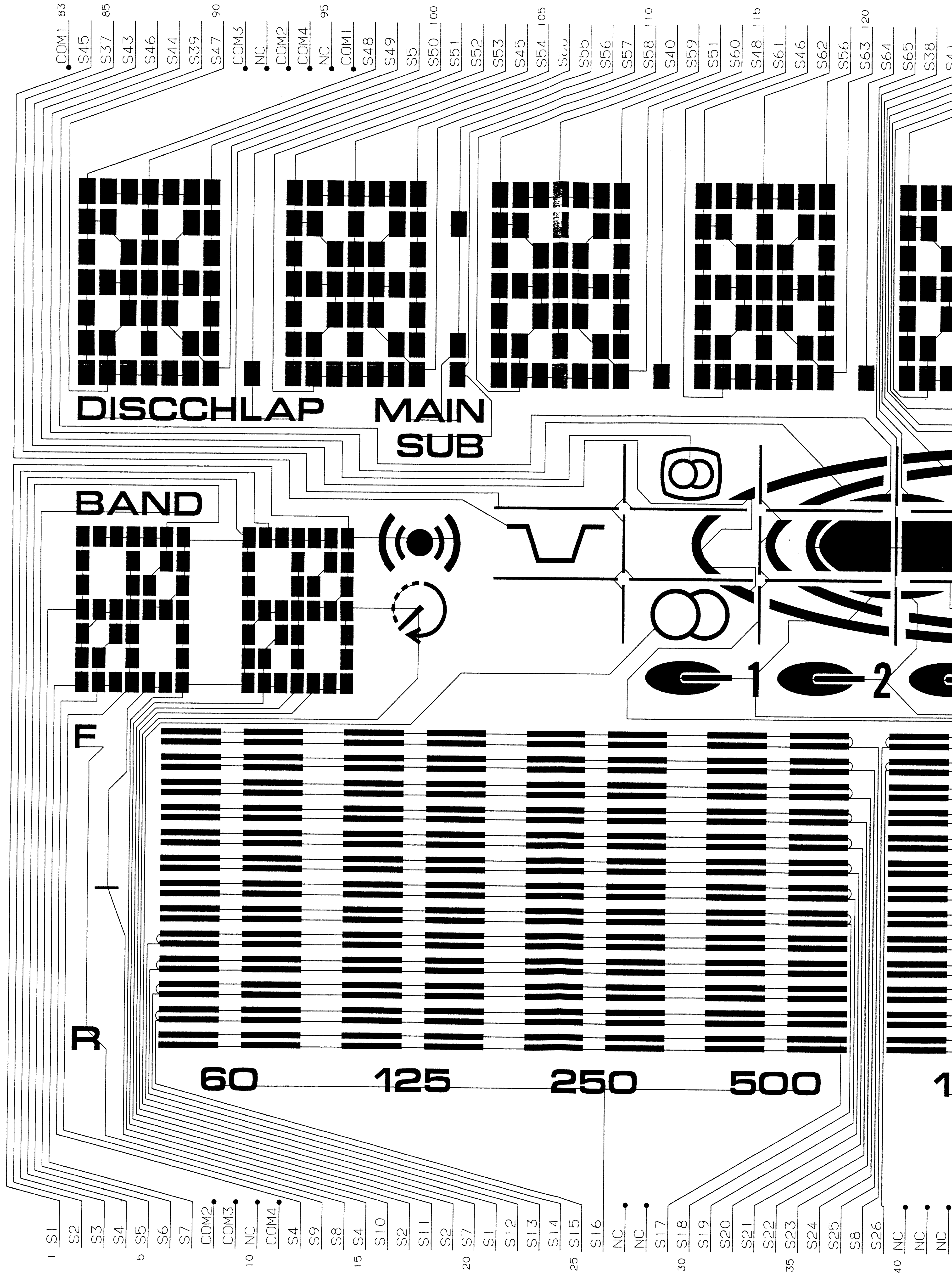
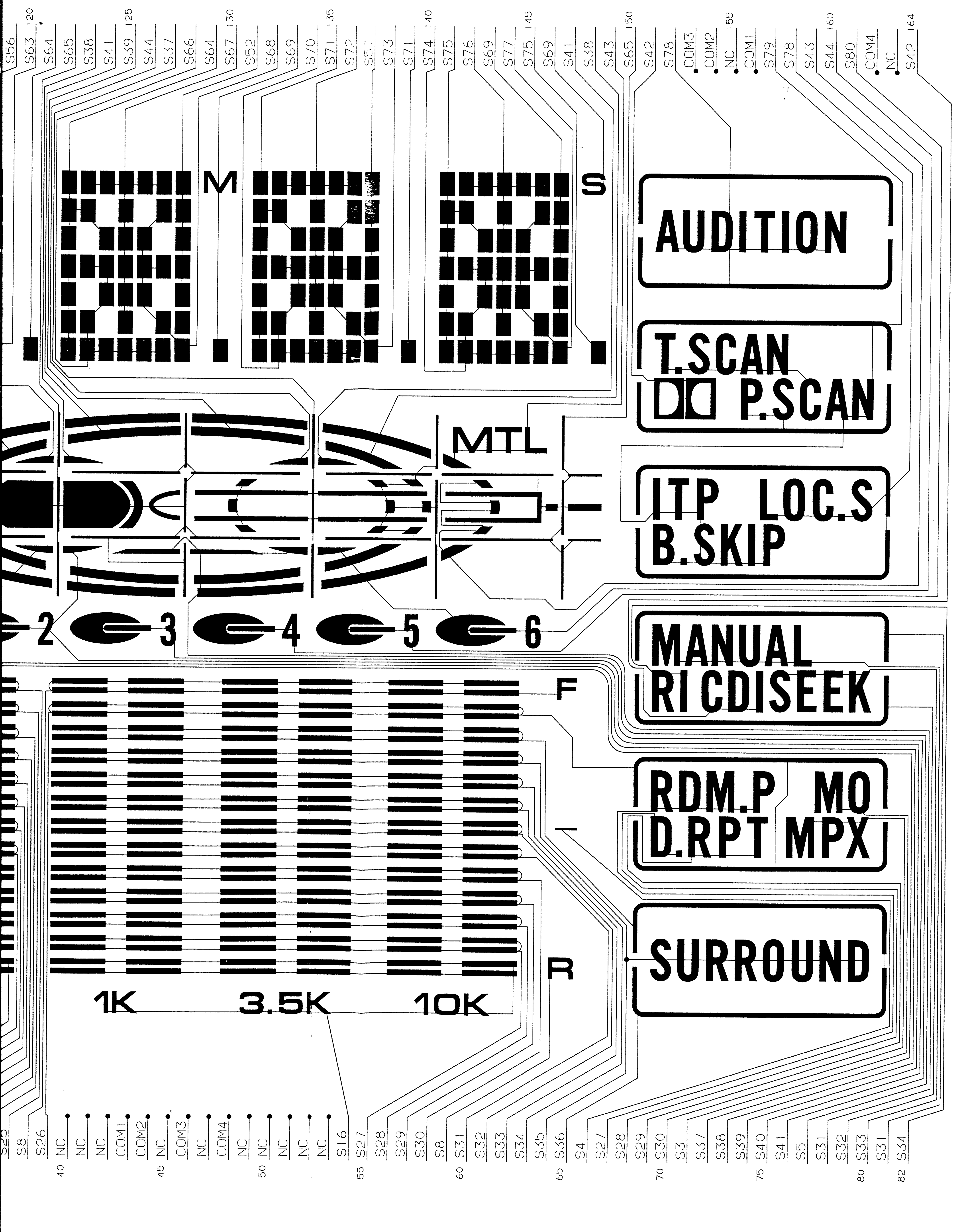

LOCH
LOCL
IN
GND
VCO
GND
VCL
OUT
VCC
IC1
Q1
Q2
Q3
T1
T2
T3
CF1
9.5V

Fig. 51

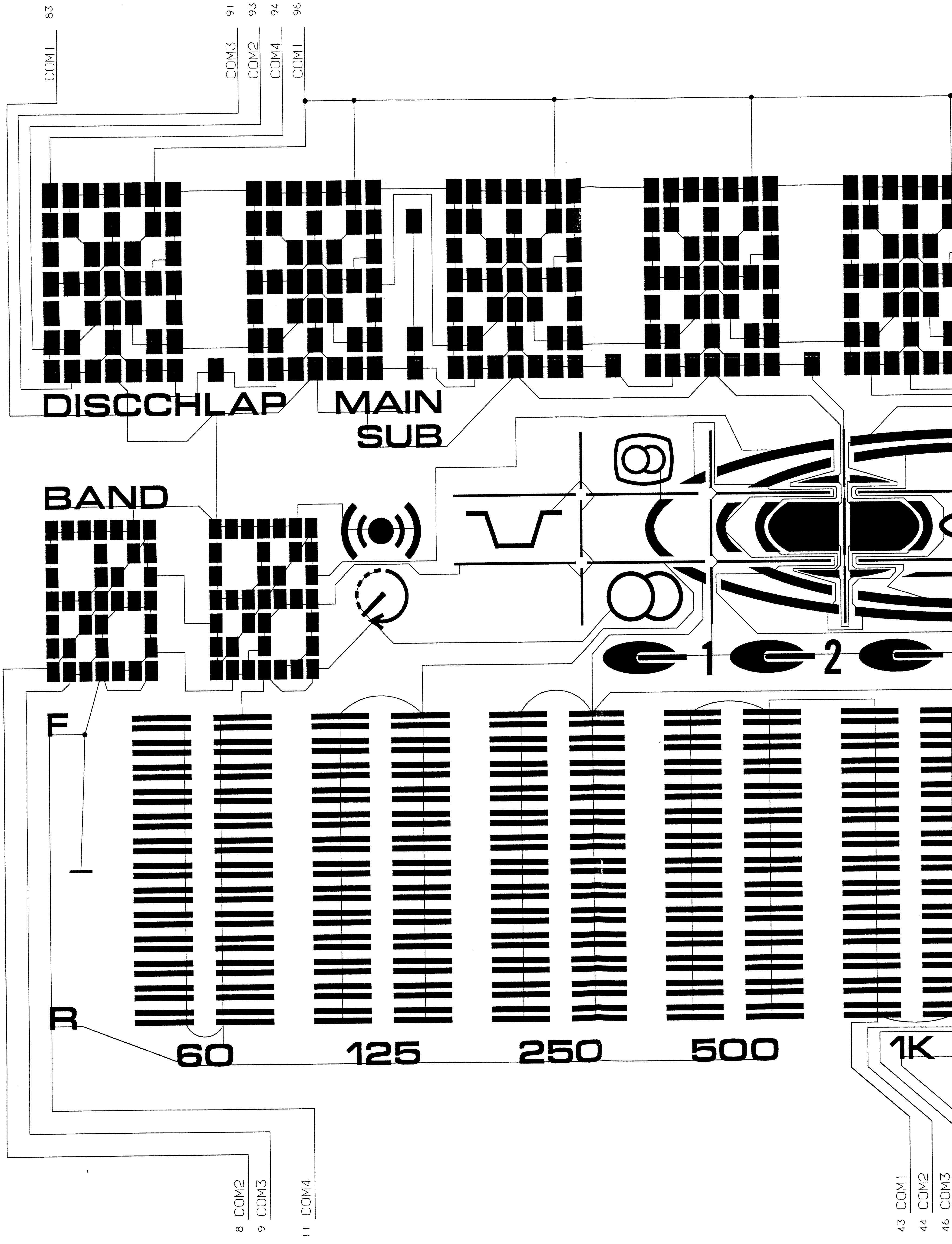
● LCD (CAW1138)
SEGMENT


A
B
C
D
E
F
COM1 83
S45
S37 85
S43
S46
S44
S39
S47 90
COM3
NC
COM2
COM4
NC 95
COM1
S48
S49
S5
S50 100
S51
S52
S53
S45
S54 105
S55
S56
S57
S58 110
S40
S59
S51
S60
S48 115
S61
S46
S62
S56
S63 120
S64
S65
S38
DISCCHLAP
MAIN
SUB
BAND
F
R
1
2
60
125
250
500
1 S1
S2
S3
S4
5 S5
S6
S7
COM2
COM3
10 NC
COM4
S4
S9
S8
15 S4
S10
S2
S11
S2
20 S7
S1
S12
S13
S14
25 S15
S16
NC
NC
S17
30 S18
S19
S20
S21
S22
35 S23
S24
S25
S8
S26
40 NC
NC
NC
1
2
3
4
5


S56
S63
120
S64
S65
S38
S41
S39
125
S44
S37
S66
S64
S67
130
S52
S68
S69
S70
S71
135
S72
S5
S73
S71
S74
140
S75
S76
S69
S77
S75
145
S69
S41
S38
S43
S65
150
S42
S78
COM3
COM2
NC
155
COM1
S79
S78
S43
S44
160
S80
COM4
NC
S42
164
M
S
AUDITION
T.SCAN
P.SCAN
MTL
ITP LOC.S
B.SKIP
2
3
4
5
6
MANUAL
RI CDISEEK
F
RDM.P MO
D.RPT MPX
SURROUND
R
1K
3.5K
10K
S25
S8
S26
40
NC
NC
NC
COM1
COM2
45
NC
COM3
NC
COM4
NC
50
NC
NC
NC
NC
S16
55
S27
S28
S29
S30
S8
60
S31
S32
S33
S34
S35
65
S36
S4
S27
S28
S29
70
S30
S3
S37
S38
S39
75
S40
S41
S5
S31
S32
80
S33
S31
82
S34

Fig

COMMON


COM1 83
COM3 91
COM2 93
COM4 94
COM1 96
DISCCHLAP
MAIN
SUB
BAND
F
R
1
2
60
125
250
500
1K
COM2 8
COM3 9
COM4 11
COM1 43
COM2 44
COM3 46

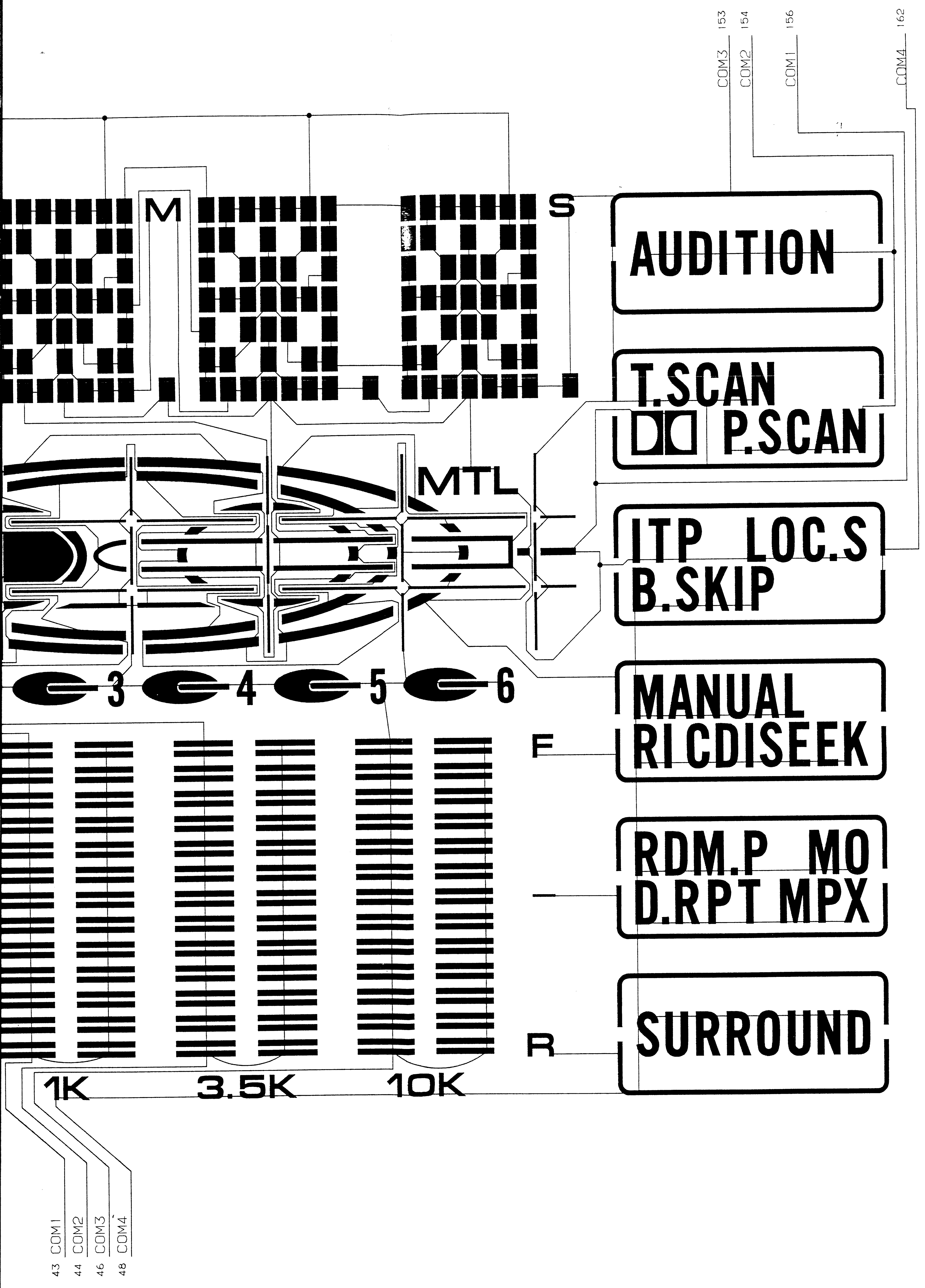
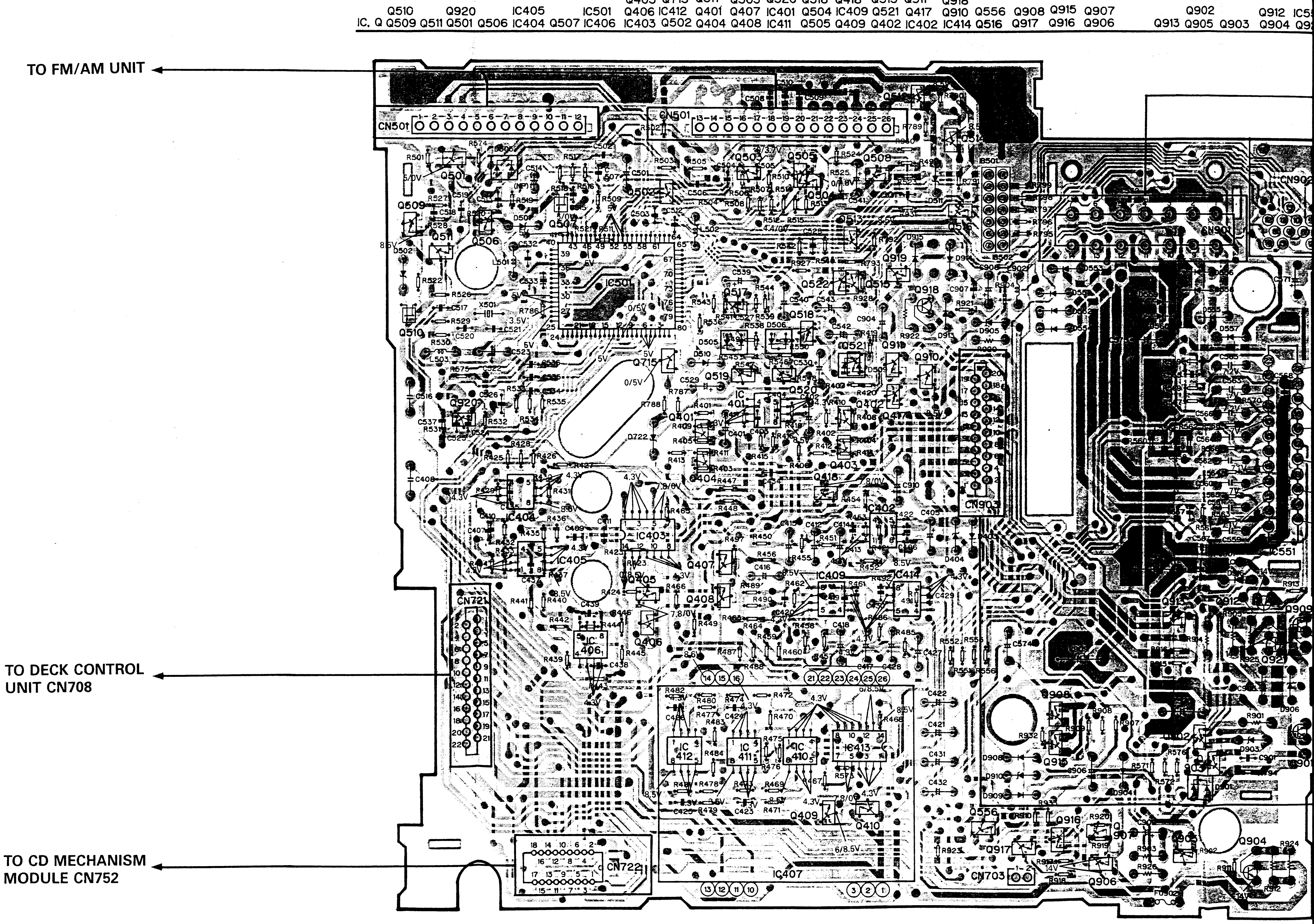

COM3 153
COM2 154
COM1 156
COM4 162
M
S
AUDITION
T.SCAN
P.SCAN
MTL
ITP LOC.S
B.SKIP
3
4
5
6
MANUAL
RI CDISEEK
F
RDM.P MO
D.RPT MPX
SURROUND
R
1K
3.5K
10K
COM1 43
COM2 44
COM3 46
COM4 48
A
B
C
D
E
F
5
6
7
8
9

Fig. 53

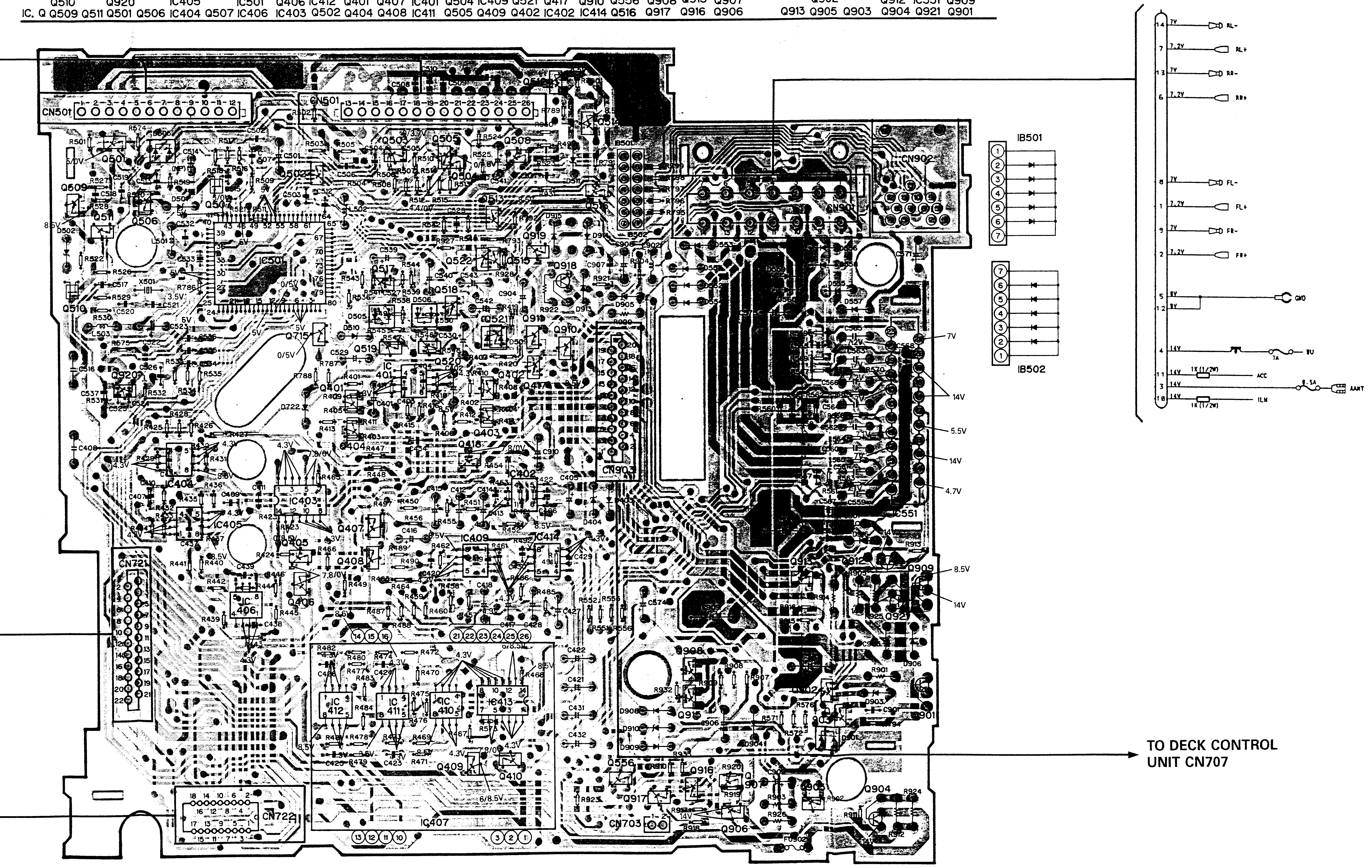
13. CONNECTION DIAGRAM (1) (FH-M70/ES)

AMP P.C. BOARD


IC, Q
Q510 Q509
Q511
Q920 Q501
Q506
IC405 IC404
Q507
IC501 IC406
Q405 Q406 IC403
Q715 IC412 Q502
Q517 Q401 Q404
Q519 Q503 Q407 Q408
IC407 Q520 IC401 IC411
Q522 IC410 Q518 Q504 Q505
IC413 Q513 Q403 Q418 IC409 Q409
Q410 Q508 Q515 Q521 Q402
Q512 Q919 Q911 Q417 IC402
Q514 Q918 Q910 IC414
Q556 Q516
Q908 Q917
Q915 Q916
Q907 Q906
Q913
Q902 Q905
Q903
Q912 Q904
TO FM/AM UNIT
TO DECK CONTROL UNIT CN708
TO CD MECHANISM MODULE CN752
CN501
CN721
CN722
CN901
CN902
CN903
CN703
IC501
IC401
IC403
IC404
IC405
IC406
IC407
IC409
IC410
IC411
IC412
IC413
IC414
IC402
IC551

AMP P.C. BOARD

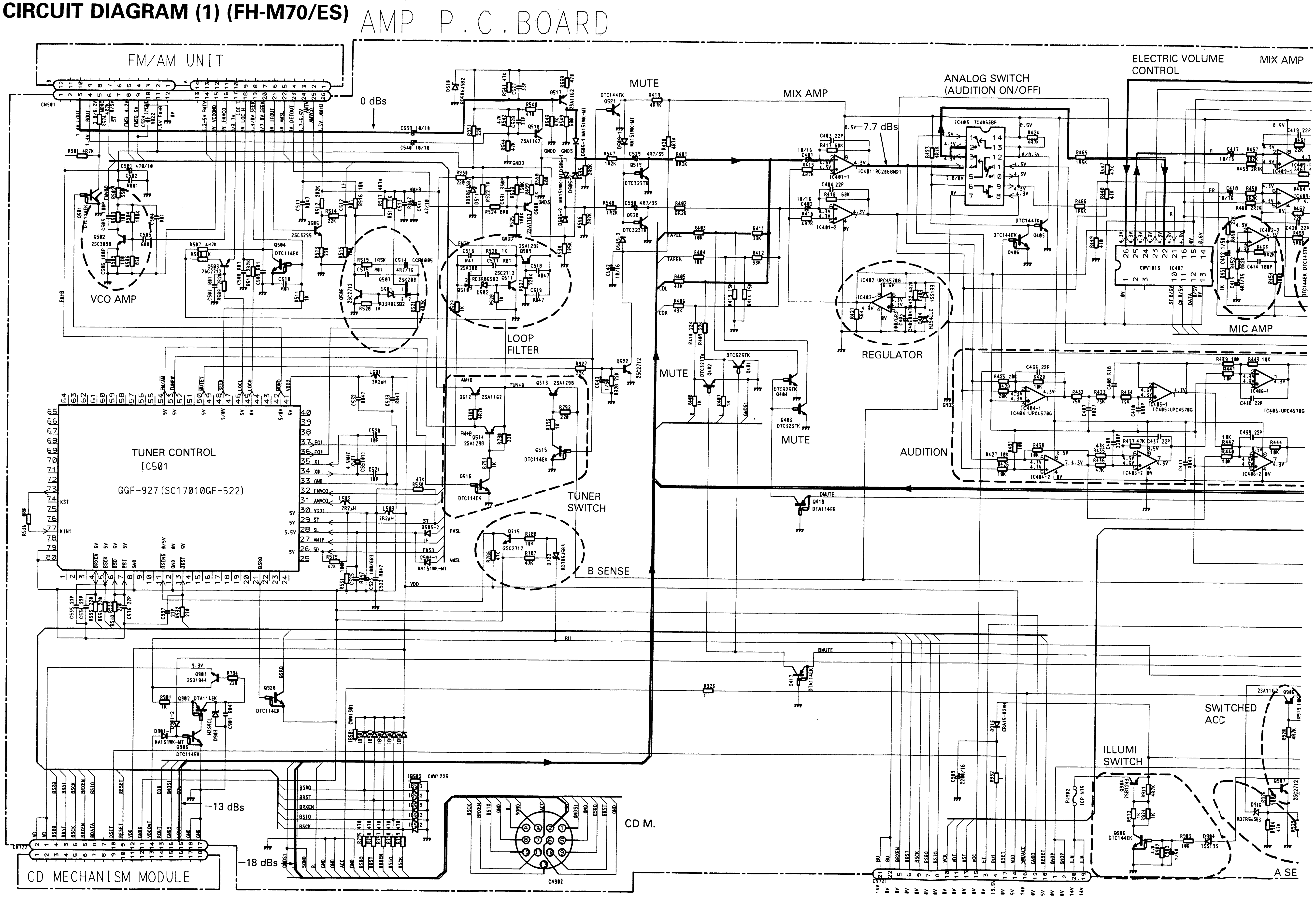
IC. Q	Q510 Q509	Q511	Q920 Q501	Q506	IC405 IC404	Q507	IC501 IC406	Q405 Q406 IC403	Q715 IC412 Q502	Q517 Q401 Q404	Q519 Q503 Q407 Q408	IC407 Q520 IC401 IC411	Q522 IC410 Q518 Q504 Q505	IC413 Q513 Q403 Q418 IC409 Q409	Q410 Q508 Q515 Q521 Q402	Q512 Q919 Q911 Q417 IC402	Q514 Q918 Q910 IC414	Q556 Q516	Q908 Q917	Q915 Q916	Q907 Q906	Q913	Q902 Q905	Q903	Q912 Q904	IC551 Q921	Q909 Q901

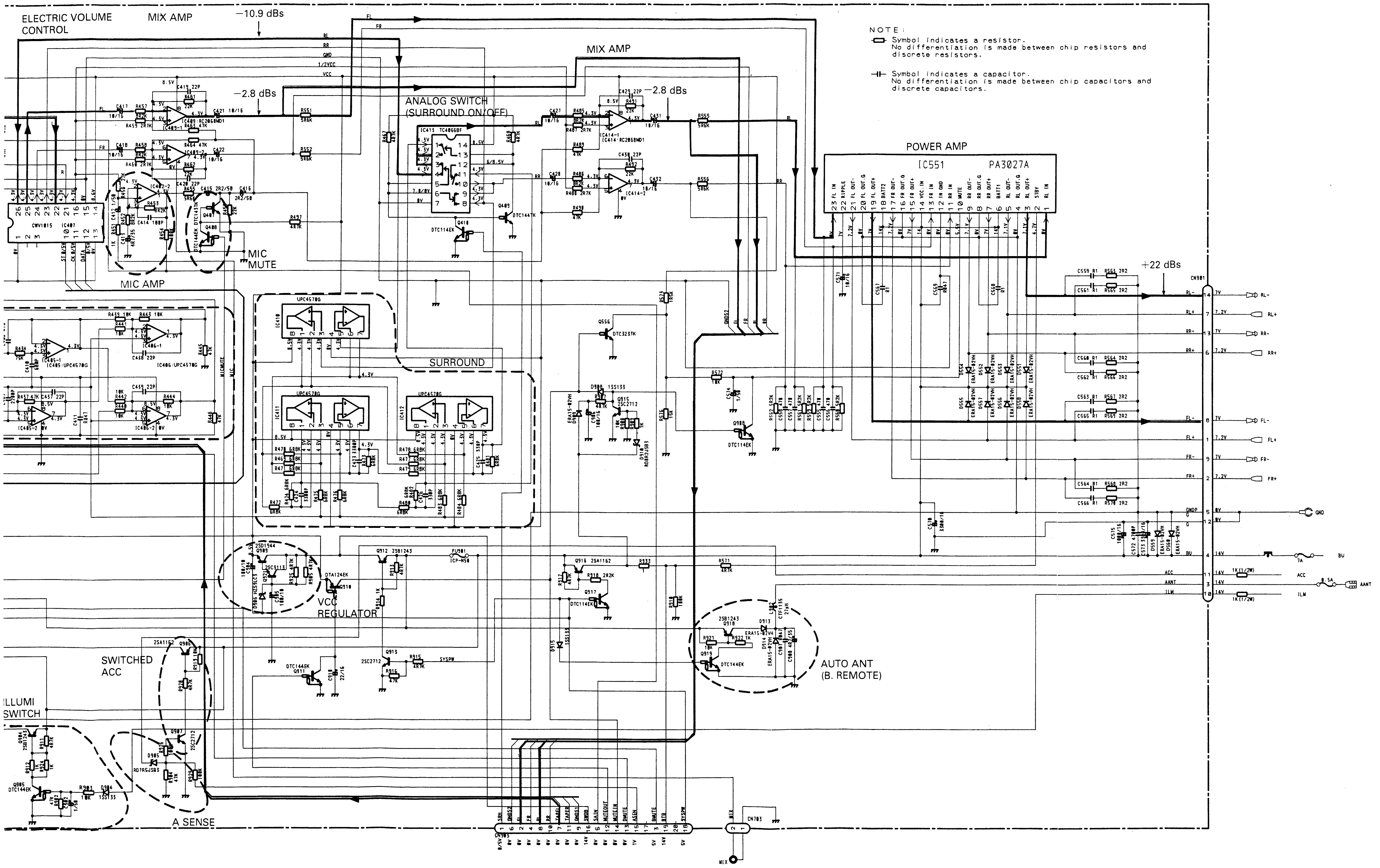

CN501
CN902
CN901
CN903
CN721
CN722
CN703
IB501
IB502
IC501
IC403
IC404
IC405
IC406
IC407
IC409
IC410
IC411
IC412
IC413
IC414
IC551
RL-
RL+
RR-
RR+
FL-
FL+
FR-
FR+
GND
BU
ACC
ANT
ILM
1K (1/2W)
7V
7.2V
8V
14V
5.5V
4.7V
8.5V

TO DECK CONTROL UNIT CN707

Fig. 54

14. SCHEMATIC CIRCUIT DIAGRAM (1) (FH-M70/ES)


AMP P.C.BOARD
FM/AM UNIT
CN501
0 dBs
VCO AMP
LOOP FILTER
MUTE
MIX AMP
7.7 dBs
ANALOG SWITCH (AUDITION ON/OFF)
IC403 TC4066BF
ELECTRIC VOLUME CONTROL
MIX AMP
IC407 CWV1015
MIC AMP
REGULATOR
IC402 UPC4570G
TUNER CONTROL
IC501
GGF-927(SC17010GF-522)
TUNER SWITCH
B SENSE
MUTE
AUDITION
IC404 UPC4570G
IC405 UPC4570G
IC406 UPC4570G
SWITCHED ACC
ILLUMI SWITCH
−13 dBs
−18 dBs
CD M.
CN902
CN722
CD MECHANISM MODULE
CN721
A SE
1
2
3
4
5
6
A
B
C
D


ELECTRIC VOLUME CONTROL
MIX AMP
−10.9 dBs
−2.8 dBs
MIX AMP
ANALOG SWITCH (SURROUND ON/OFF)
−2.8 dBs
POWER AMP
IC551 PA3027A
+22 dBs
CWV1015 IC407
IC409 RC2068MD1
IC414 RC2068MD1
IC415 TC4066BF
MIC AMP
MIC MUTE
SURROUND
UPC4570G
IC410
IC411
IC412
IC405 UPC4570G
IC406 UPC4570G
VCC REGULATOR
SWITCHED ACC
ILLUMI SWITCH
A SENSE
AUTO ANT (B. REMOTE)
CN981
RL-
RL+
RR-
RR+
FL-
FL+
FR-
FR+
GND
BU
ACC
AANT
ILM
7A
0.5A
CN985
CN703
MIX
FU981 ICP-N50

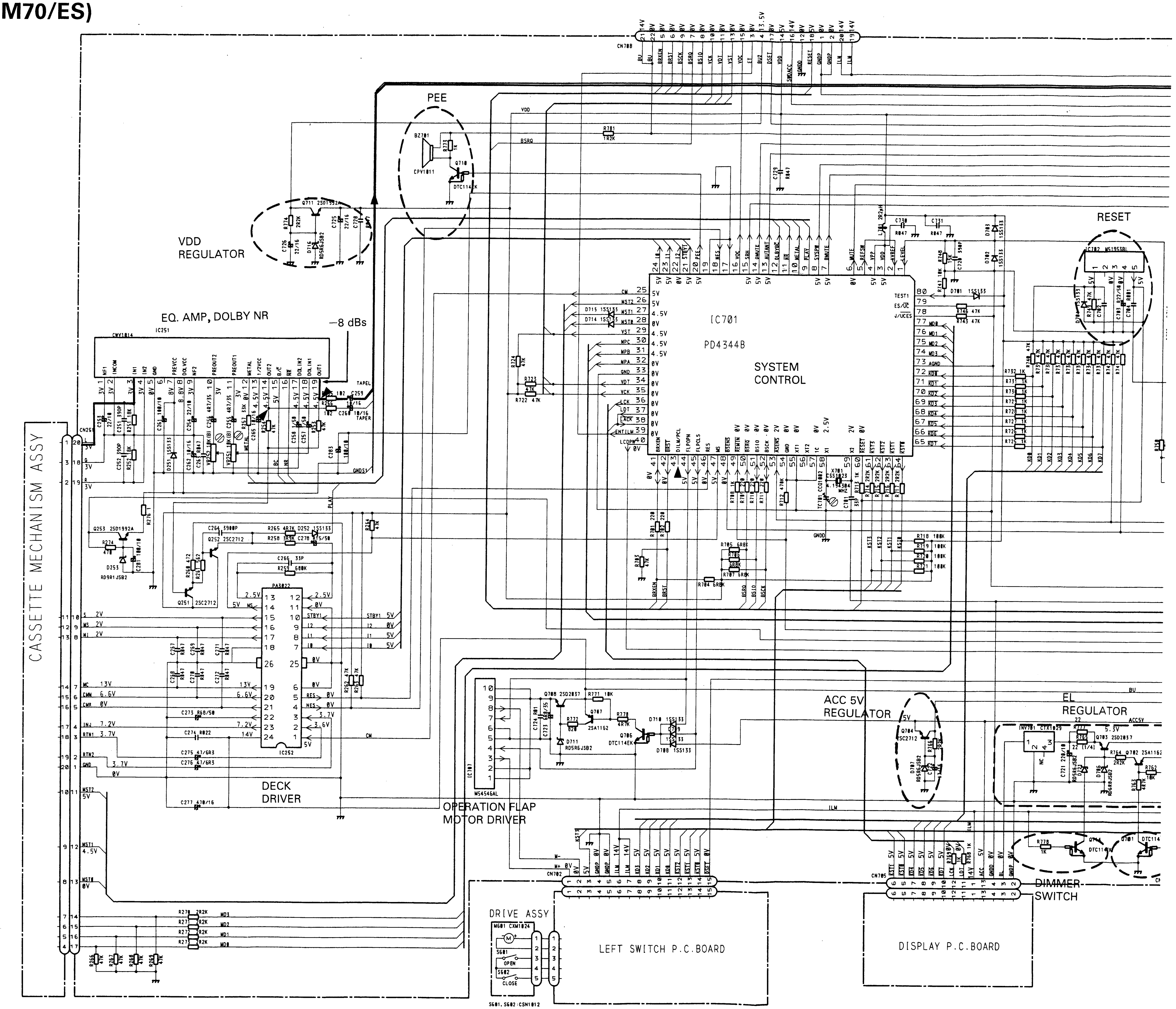
NOTE:

▭ Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

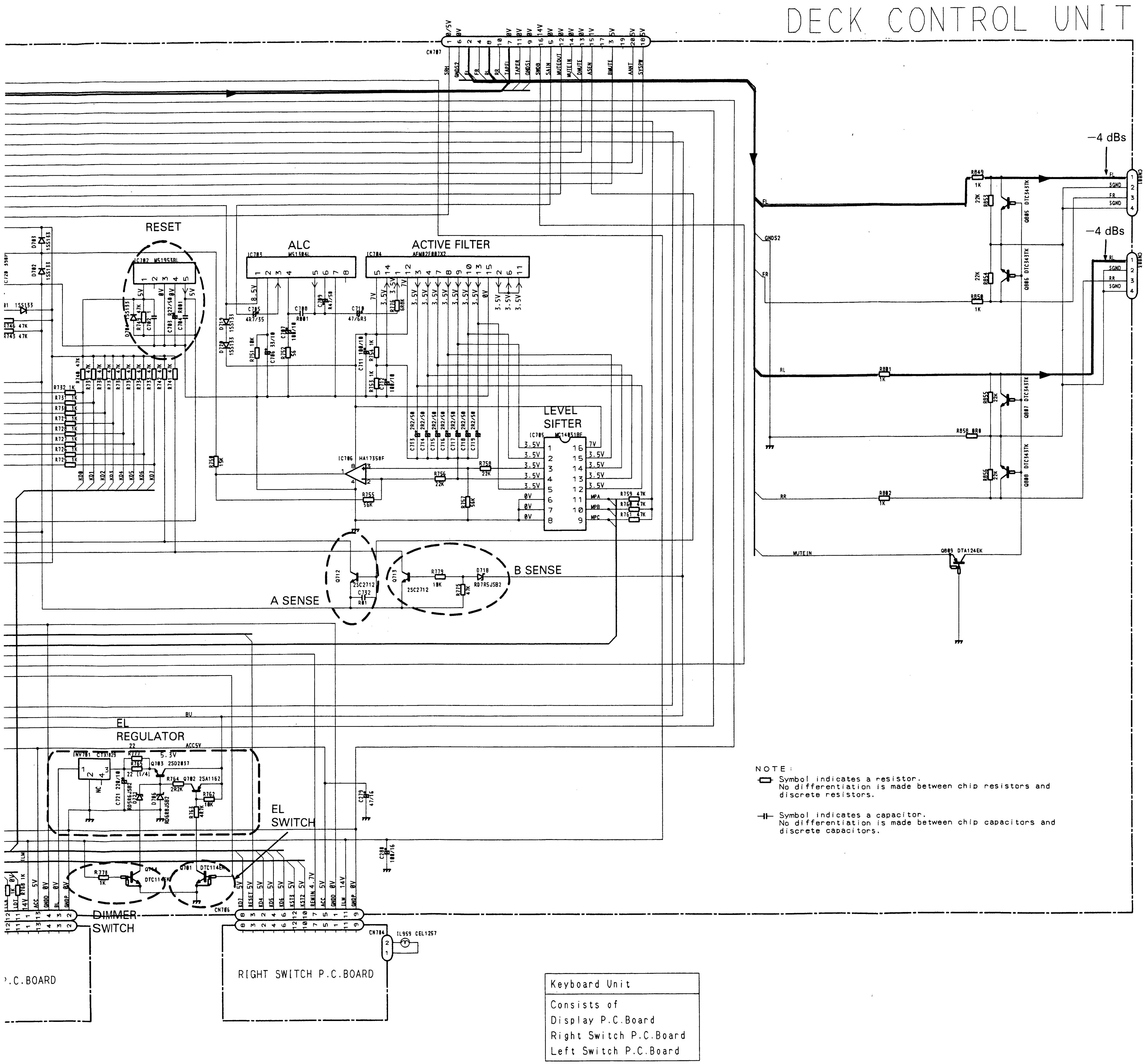
⊣⊢ Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

Fig. 55

15. SCHEMATIC CIRCUIT DIAGRAM (2) (FH-M70/ES)


CN708
PEE
BZ701
CPV1011
Q710
DTC114EK
VDD
BSRQ
R781
VDD REGULATOR
Q711 2SD1992A
D716 RD5R6JSB2
RESET
IC702 M51953BL
EQ. AMP, DOLBY NR
IC251
CWV1014
−8 dBs
TAPEL
TAPER
IC701
PD4344B
SYSTEM CONTROL
X701 CSS1023 4.194304 MHZ
GNDD
CASSETTE MECHANISM ASSY
CN251
Q253 2SD1992A
D253 RD9R1JSB2
Q252 2SC2712
Q251 2SC2712
D251 1SS133
D252 1SS133
PA3022
IC252
DECK DRIVER
IC707
M54546AL
OPERATION FLAP MOTOR DRIVER
Q708 2SD2037
Q707 2SA1162
Q706 DTC114EK
D711 RD5R6JSB2
D710 1SS133
D708 1SS133
ACC 5V REGULATOR
Q704 2SC2712
D707 RD5R6JSB2
EL REGULATOR
INV701 CTX1023
Q703 2SD2037
Q702 2SA1162
ILM
CN702
CN705
DIMMER SWITCH
Q701 DTC114
DRIVE ASSY
M601 CXM1024
S601 OPEN
S602 CLOSE
S601, S602: CSN1012
LEFT SWITCH P.C.BOARD
DISPLAY P.C.BOARD

DECK CONTROL UNIT


CN707
RESET
IC702 M51953BL
ALC
IC703 M51594L
ACTIVE FILTER
IC704
LEVEL SIFTER
IC705
IC706 HA17358F
A SENSE
B SENSE
Q712 2SC2712
Q713 2SC2712
EL REGULATOR
EL SWITCH
Q701 DTC114EK
Q714 DTC114EK
Q703 2SD2037
Q702 2SA1162
DIMMER SWITCH
CN705
CN704
IL959 CEL1257
RIGHT SWITCH P.C.BOARD
P.C.BOARD
−4 dBs
−4 dBs
CN801
CN802
Q805 DTC343TK
Q806 DTC343TK
Q807 DTC343TK
Q808 DTC343TK
Q809 DTA124EK
FL
FR
RL
RR
GNDS2
MUTEIN
7
8
9
10
11
12
A
B
C
D

NOTE:

▭ Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

⊣⊢ Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

Keyboard Unit
Consists of Display P.C.Board Right Switch P.C.Board Left Switch P.C.Board

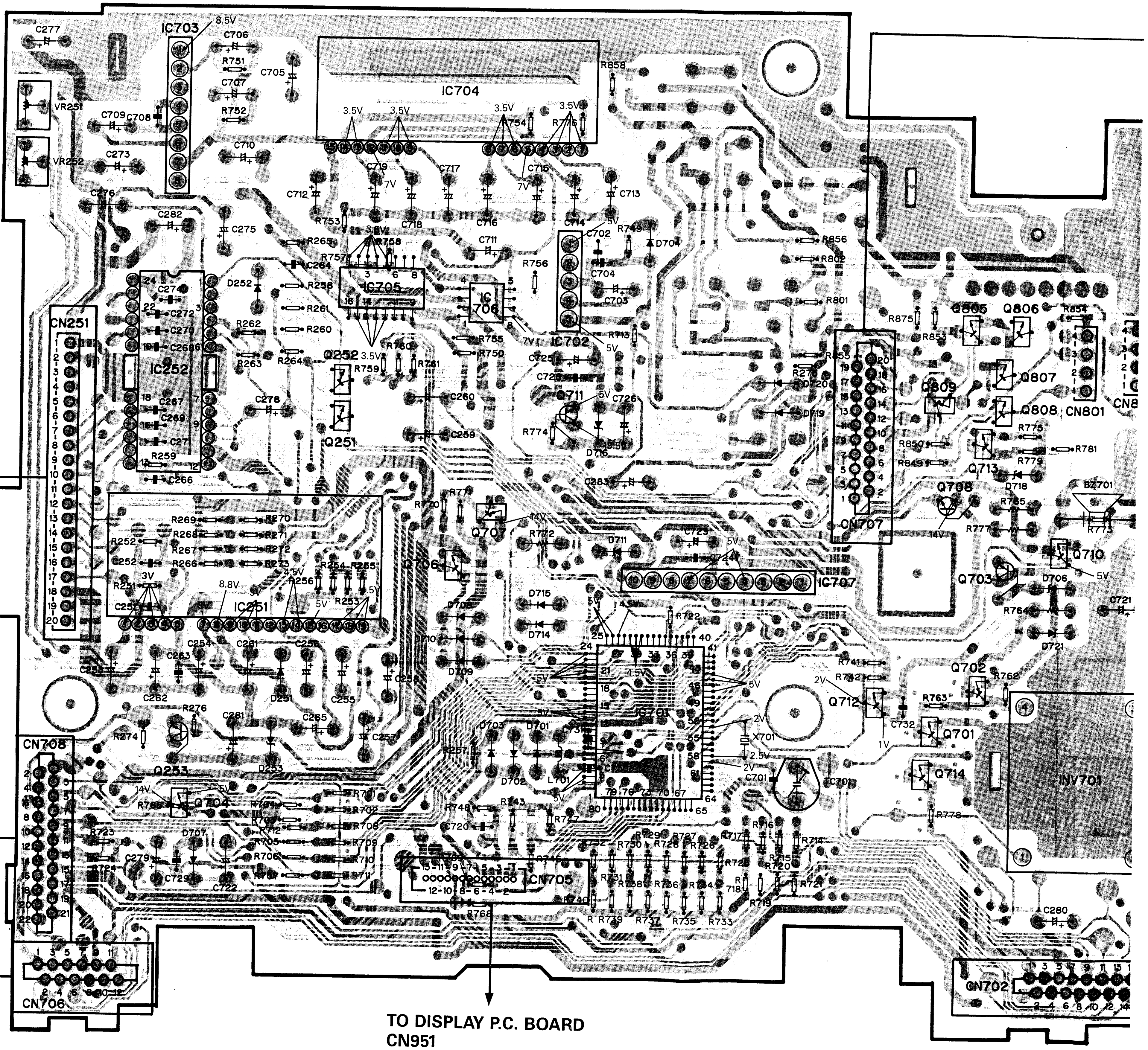
Fig. 56

16. CONNECTION DIAGRAM (2) (FH-M70/ES)

DECK CONTROL UNIT

IC, Q — IC252 IC703 Q704 Q253 IC251 Q251 IC705 Q252 IC704 Q706 IC706 Q707 Q711 IC702 IC701 IC707 Q712 Q701 Q714 Q805 Q809 Q708 Q807 Q808 Q713 Q702 Q806 Q703 Q710

ADJ — VR251 VR252 TC701


IC703
8.5V
C277
VR251
VR252
C709 C708
C273
C276
C706
R751
C707
R752
C705
C710
IC704
3.5V
7V
C712
C719
C717
C715
C713
C716
C718
C714
C702
R749
D704
R858
R856
R802
R801
C282
C275
R753
R265
R757
R758
C264
IC705
C711
R756
IC706
C704
C703
IC702
CN251
IC252
C274
C272
C270
C268
C267
C269
C271
R259
C266
D252
R258
R261
R260
R262
R263
R264
Q252
R759
R760
R761
R755
R750
C725
C722
Q711
C726
R774
D716
D715
D714
C260
C259
C278
Q251
R713
C283
R875
R853
R855
R276
D720
D719
CN707
Q805
Q806
R854
Q807
Q809
Q808
CN801
R775
R850
R849
Q713
R779
R781
D718
Q708
R765
R777
BZ701
R773
Q710
Q703
D706
5V
14V
R764
D721
C721
R269
R268
R267
R266
R270
R271
R272
R273
R252
C252
R251
C251
IC251
8.8V
4.5V
R256
R254
R255
R253
3V
R771
R770
Q707
R772
Q706
D711
C723
C724
IC707
D708
D710
D709
R722
IC701
X701
C701
TC701
R741
R742
Q712
2V
1V
R763
C732
Q702
R762
Q701
Q714
R778
INV701
C253
C263
C254
C261
C258
C262
D251
C255
C256
C257
C265
R274
R276
C281
Q253
D253
CN708
Q704
R701
R702
R703
R704
R705
R706
R707
R708
R709
R710
R711
R712
R723
R724
D707
C279
C729
C722
R743
R748
D703
D701
D702
L701
C731
C720
R747
R746
CN705
R766
R740
R739
R737
R735
R733
R732
R730
R729
R728
R727
R726
R725
R731
R738
R736
R734
R718
R719
R717
R716
R715
R720
R714
R721
C280
CN702
CN706
CN8

TO CASSETTE MECHANISM ASSY

TO AMP P.C. BOARD CN721

TO RIGHT SWITCH P.C. BOARD CN952

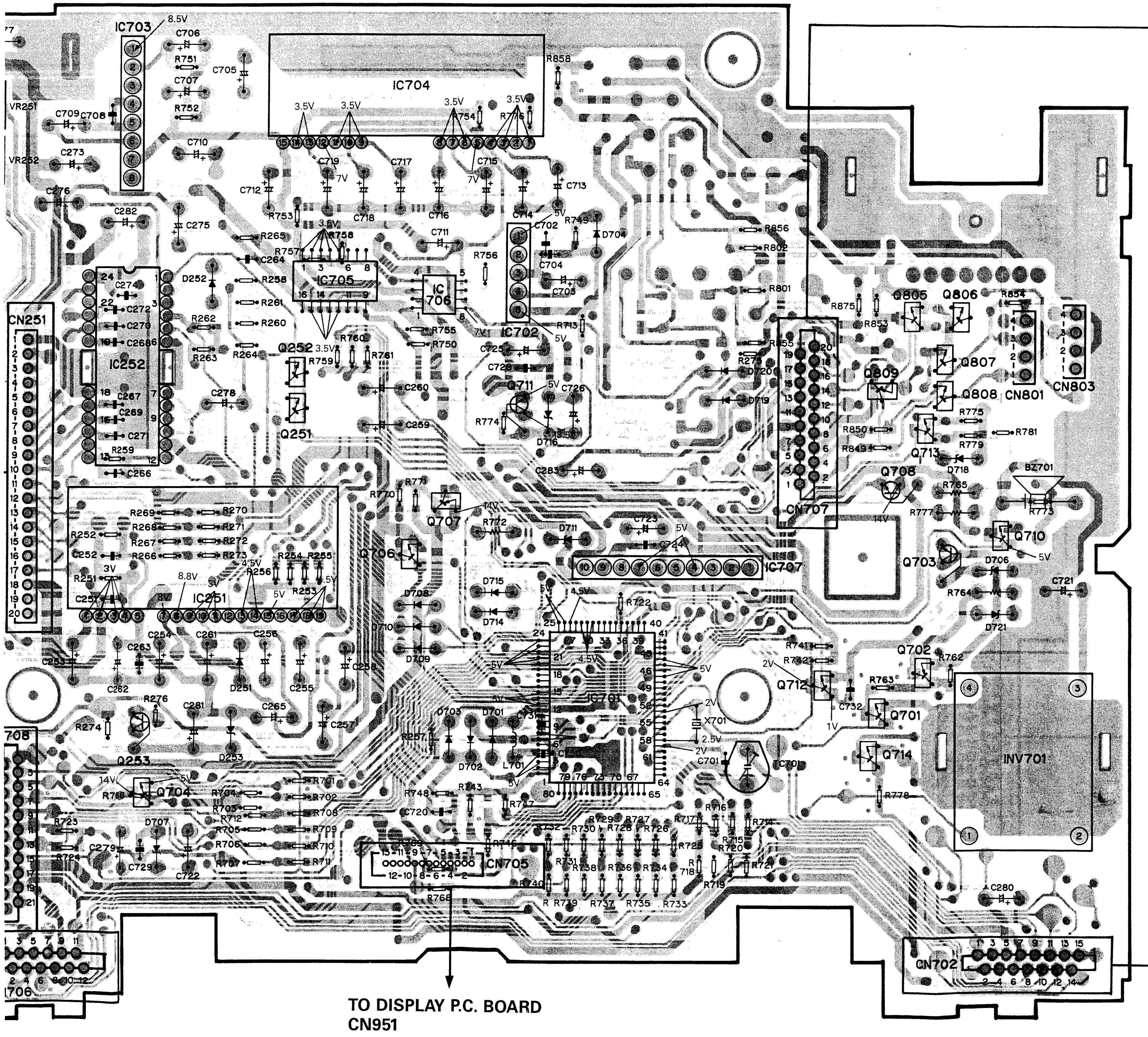
TO DISPLAY P.C. BOARD CN951

ONTROL UNIT

IC252 Q704 IC703 Q253 IC251 Q251 IC705 Q252 IC704 Q706 IC706 Q707 Q711 IC702 IC701 IC707 Q712 Q701 Q714 Q805 Q809 Q708 Q807 Q808 Q713 Q702 Q806 Q703 Q710

R251
R252

TC701


IC703
IC704
IC705
IC706
IC702
IC252
IC251
IC701
IC707
CN251
CN707
CN801
CN803
CN705
CN702
INV701
BZ701
X701
Q251
Q252
Q253
Q704
Q706
Q707
Q711
Q712
Q701
Q714
Q702
Q703
Q708
Q710
Q713
Q805
Q806
Q807
Q808
Q809
3.5V
5V
7V
14V
8.5V
4.5V
2V
2.5V
1V

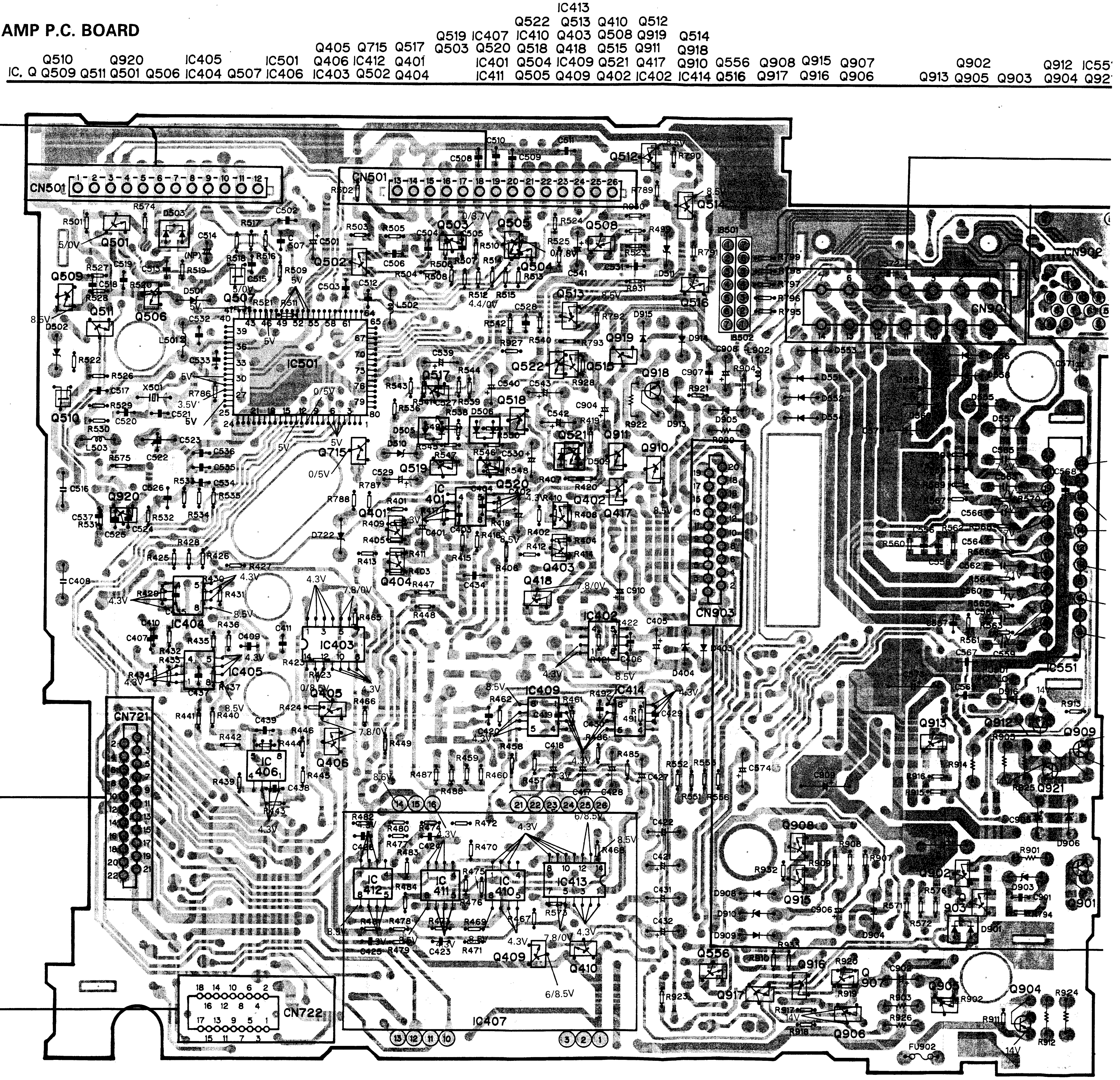
TO AMP P.C. BOARD CN903

TO LEFT SWITCH P. C. BOARD CN953

TO DISPLAY P.C. BOARD CN951

Fig. 57

17. CONNECTION DIAGRAM (1) (FH-M75/UC)


AMP P.C. BOARD
IC, Q
Q510 Q509
Q511
Q920 Q501
Q506
IC405 IC404
Q507
IC501 IC406
Q405 Q406 IC403
Q715 IC412 Q502
Q517 Q401 Q404
Q519 Q503
IC407 Q520 IC401 IC411
Q522 IC410 Q518 Q504 Q505
IC413 Q513 Q403 Q418 IC409 Q409
Q410 Q508 Q515 Q521 Q402
Q512 Q919 Q911 Q417 IC402
Q514 Q918 Q910 IC414
Q556 Q516
Q908 Q917
Q915 Q916
Q907 Q906
Q902 Q913 Q905
Q903
Q912 Q904
IC551 Q92
CN501
CN502
CN721
CN722
CN901
CN902
CN903
IC501
IC551
IC402
IC403
IC404
IC405
IC406
IC407
IC409
IC410
IC411
IC412
IC413
IC414

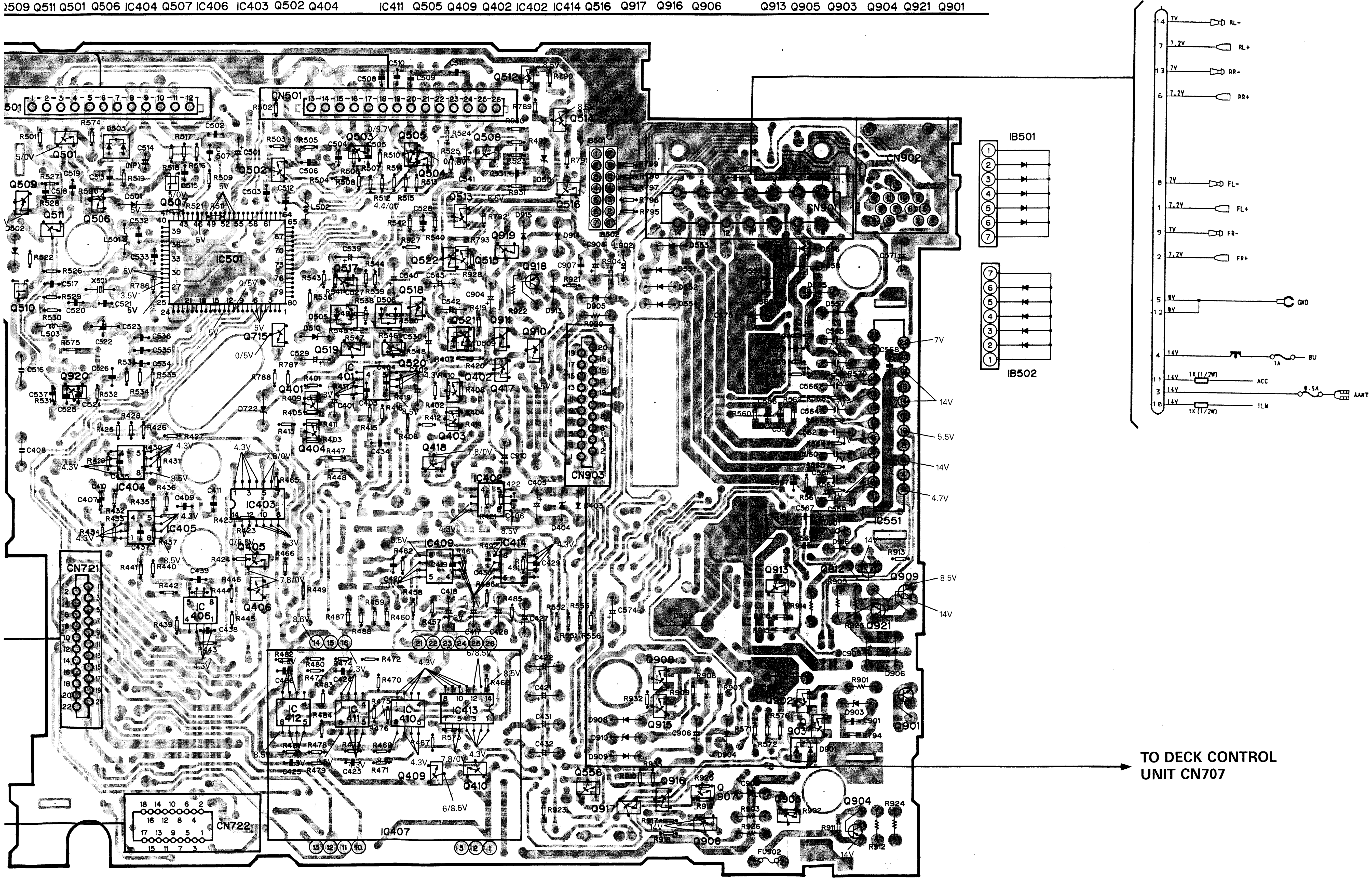
TO FM/AM UNIT

TO DECK CONTROL UNIT CN708

TO CD MECHANISM MODULE CN752

P.C. BOARD

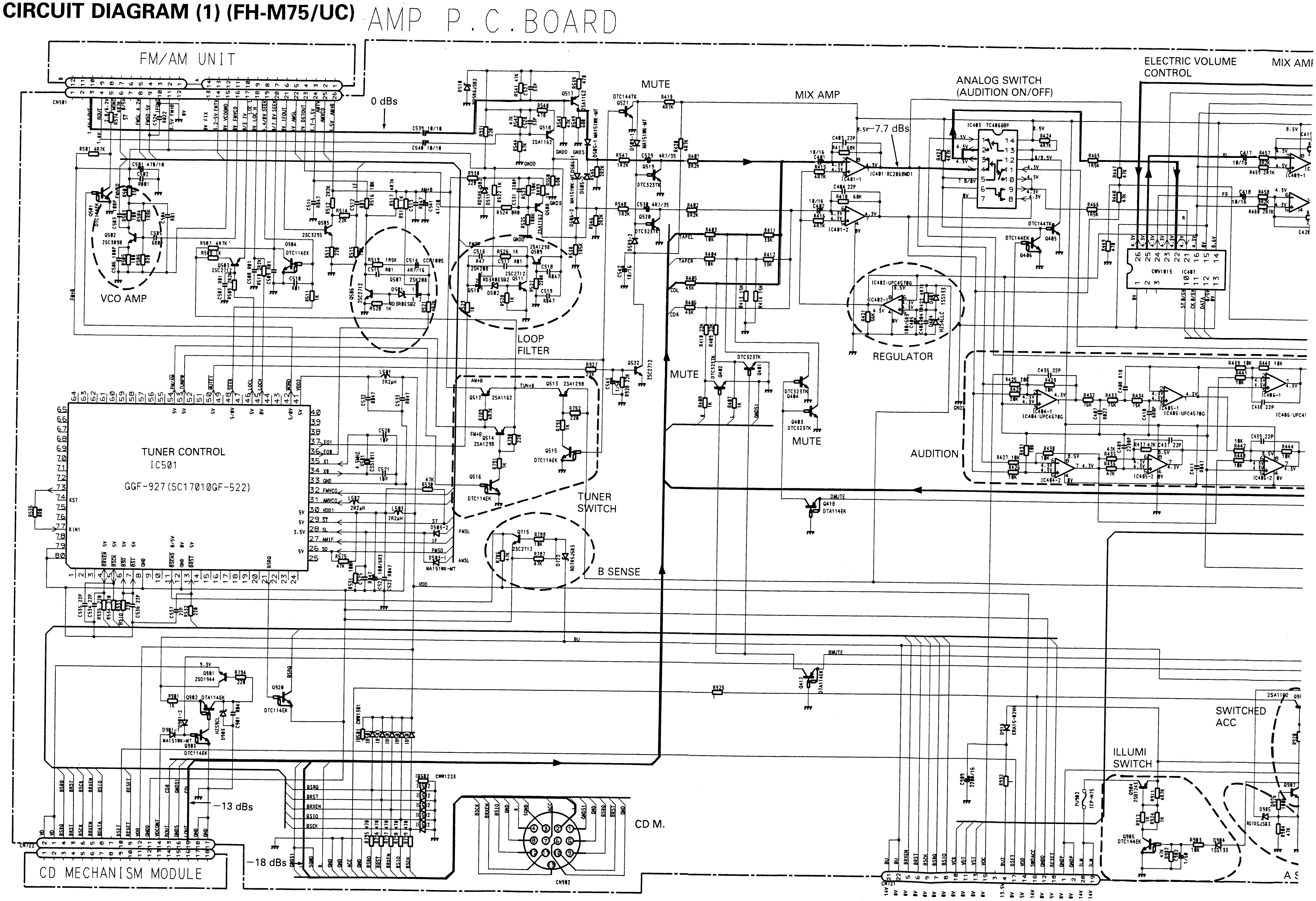
IC413
Q522 Q513 Q410 Q512
Q519 IC407 IC410 Q403 Q508 Q919 Q514
Q405 Q715 Q517 Q503 Q520 Q518 Q418 Q515 Q911 Q918
Q510 Q920 IC405 IC501 Q406 IC412 Q401 IC401 Q504 IC409 Q521 Q417 Q910 Q556 Q908 Q915 Q907 Q902 Q912 IC551 Q909
Q509 Q511 Q501 Q506 IC404 Q507 IC406 IC403 Q502 Q404 IC411 Q505 Q409 Q402 IC402 IC414 Q516 Q917 Q916 Q906 Q913 Q905 Q903 Q904 Q921 Q901

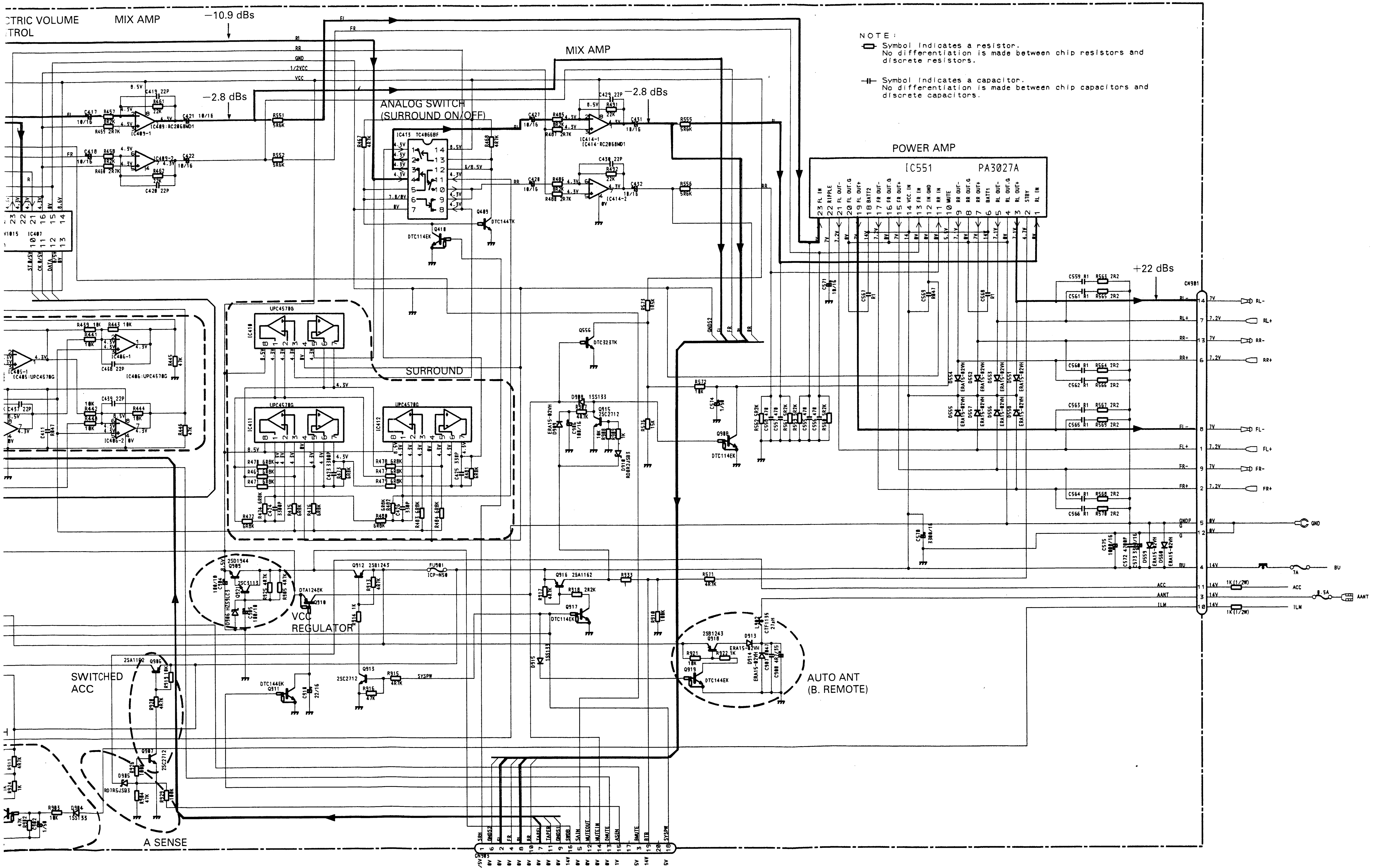

CN501
IC501
CN721
CN722
CN902
CN903
IC407
IC551
IB501
IB502
RL-
RL+
RR-
RR+
FL-
FL+
FR-
FR+
GND
BU
ACC
ANT
ILM
1K (1/2W)
7A
0.5A
7V
7.2V
14V
8.5V
5.5V
4.7V
4.3V

TO DECK CONTROL UNIT CN707

Fig. 53

18. SCHEMATIC CIRCUIT DIAGRAM (1) (FH-M75/UC)


AMP P.C.BOARD
FM/AM UNIT
0 dBs
MUTE
MIX AMP
−7.7 dBs
ANALOG SWITCH
(AUDITION ON/OFF)
ELECTRIC VOLUME
CONTROL
MIX AMP
VCO AMP
LOOP
FILTER
REGULATOR
MUTE
MUTE
AUDITION
TUNER CONTROL
IC501
GGF-927(SC17010GF-522)
TUNER
SWITCH
B SENSE
SWITCHED
ACC
ILLUMI
SWITCH
−13 dBs
−18 dBs
CD M.
CD MECHANISM MODULE
A
B
C
D



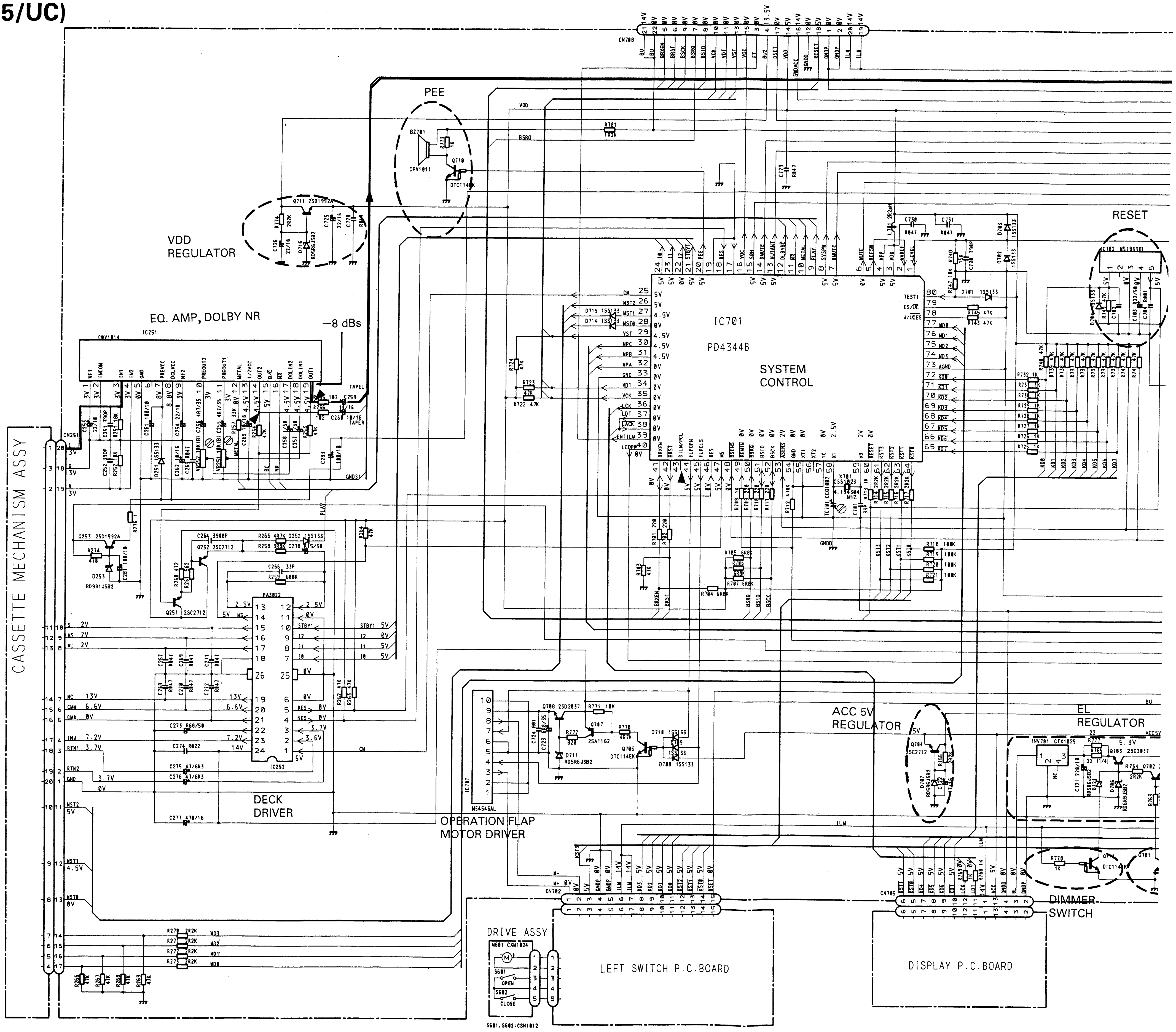
CTRIC VOLUME
TROL
MIX AMP
−10.9 dBs
−2.8 dBs
ANALOG SWITCH
(SURROUND ON/OFF)
IC415 TC4066BF
MIX AMP
−2.8 dBs
IC414-1 IC414:RC2068MD1
IC414-2
IC409-1 IC409:RC2068MD1
IC409-2
POWER AMP
IC551 PA3027A
23 FL IN
22 RIPPLE
21 FL OUT-
20 FL OUT.G
19 FL OUT+
18 BATT2
17 FR OUT-
16 FR OUT.G
15 FR OUT+
14 VCC IN
13 FR IN
12 IN GND
11 RR IN
10 MUTE
9 RR OUT-
8 RR OUT.G
7 RR OUT+
6 BATT1
5 RL OUT-
4 RL OUT.G
3 RL OUT+
2 STBY
1 RL IN
+22 dBs
CN901
RL-
RL+
RR-
RR+
FL-
FL+
FR-
FR+
GND
BU
ACC
AANT
ILM
UPC4570G
IC410
IC411
IC412
SURROUND
IC485:UPC4570G
IC486:UPC4570G
Q556 DTC523TK
Q915 2SC2712
Q908 DTC114EK
D918 RD10JS3B3
2SD1944 Q905
2SC5113
DTA124EK Q910
VCC REGULATOR
Q912 2SB1243
FU901 ICP-N50
Q916 2SA1162
Q917 DTC114EK
2SB1243 Q918
Q919 DTC114EK
AUTO ANT
(B. REMOTE)
SWITCHED ACC
2SA1162 Q906
Q907 2SC2712
D985 RD10RSJSB3
A SENSE
DTC144EK Q911
2SC2712 Q913
SYSPW
CN903
SRH
GNDS2
FL
FR
RR
TAPEL
TAPER
GNDSI
SWBD
SAIN
MUTEOUT
MUTEIN
DMUTE
ASEN
BMUTE
BTR
SYSPW

NOTE:
Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

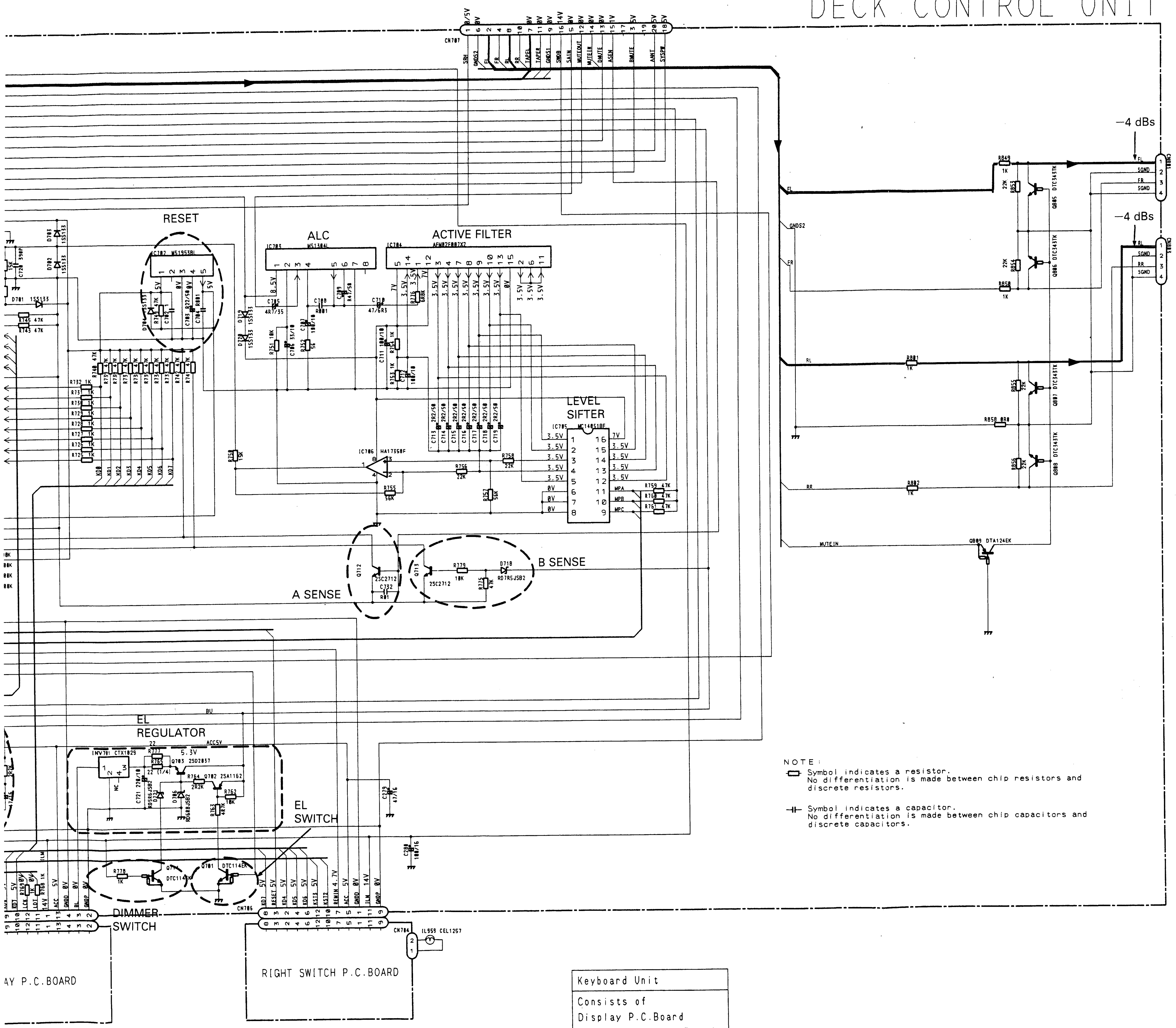
Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

Fig. 59

19. SCHEMATIC CIRCUIT DIAGRAM (2) (FH-M75/UC)


PEE
VDD REGULATOR
EQ. AMP, DOLBY NR
IC251
−8 dBs
IC701
PD4344B
SYSTEM CONTROL
RESET
CASSETTE MECHANISM ASSY
IC252
PA3022
DECK DRIVER
IC707
M54546AL
OPERATION FLAP MOTOR DRIVER
ACC 5V REGULATOR
EL REGULATOR
DIMMER SWITCH
DRIVE ASSY
LEFT SWITCH P.C.BOARD
DISPLAY P.C.BOARD
CN708
CN702
CN705
CN251

DECK CONTROL UNIT


CN707
RESET
IC702 M51953BL
ALC
IC703 M51384L
ACTIVE FILTER
IC704
LEVEL SIFTER
IC705
IC706 HA17358F
A SENSE
B SENSE
Q712 2SC2712
Q713 2SC2712
EL REGULATOR
INV701 CTX1029
Q703 2SD2037
Q702 2SA1162
EL SWITCH
DIMMER SWITCH
Q701 DTC114EK
CN706
CN704
IL959 CEL1257
RIGHT SWITCH P.C.BOARD
AY P.C.BOARD
−4 dBs
−4 dBs
CN801
CN802
Q805 DTC143TK
Q806 DTC143TK
Q807 DTC143TK
Q808 DTC143TK
Q809 DTA124EK
FL
FR
RL
RR
GNDS2
MUTEIN
SGND

NOTE:

Symbol indicates a resistor. No differentiation is made between chip resistors and discrete resistors.

Symbol indicates a capacitor. No differentiation is made between chip capacitors and discrete capacitors.

Keyboard Unit

Consists of
Display P.C.Board
Right Switch P.C.Board
Left Switch P.C.Board

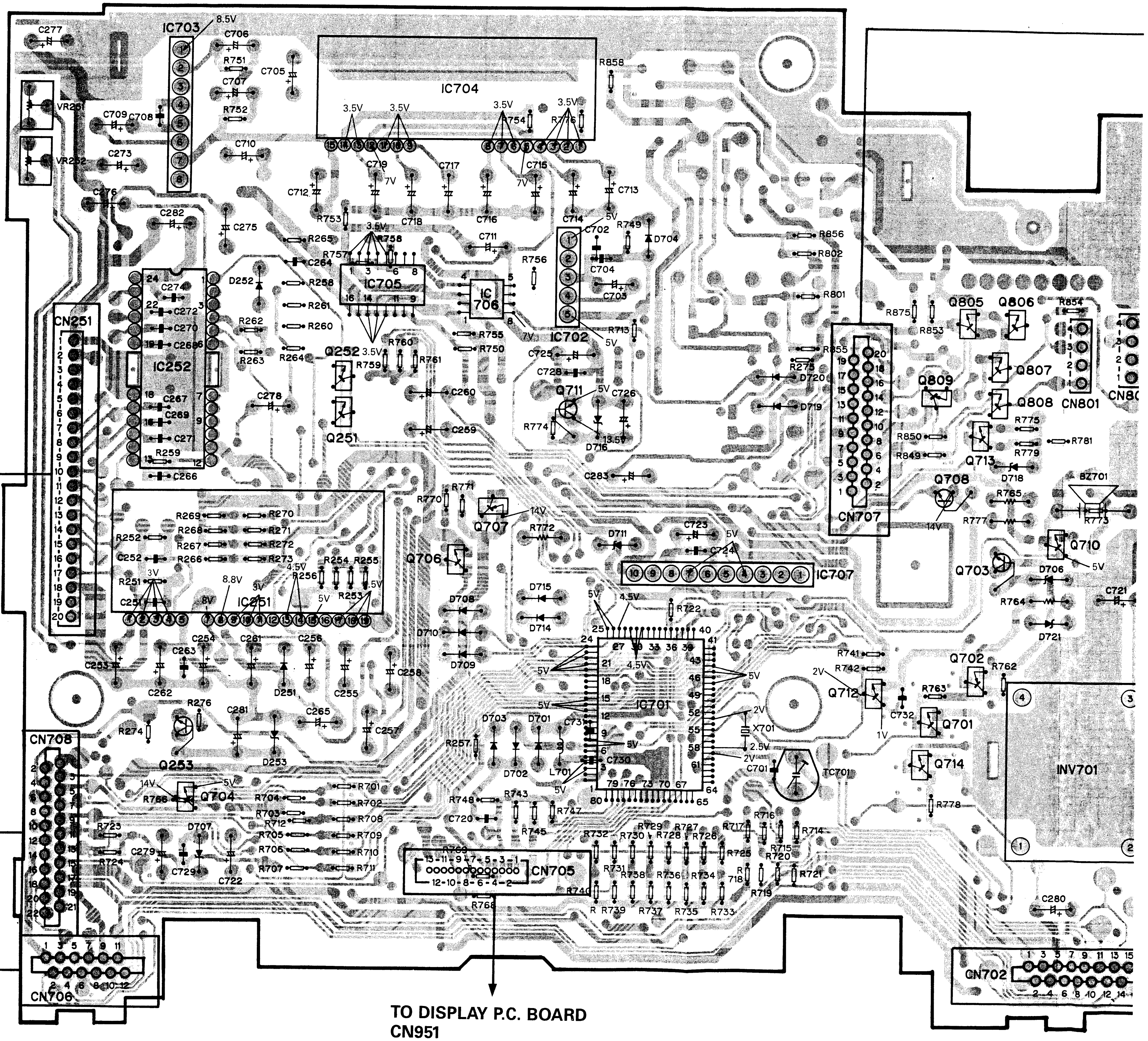
Fig. 60

20. CONNECTION DIAGRAM (2) (FH-M75/UC)

DECK CONTROL UNIT

IC, Q: IC252 IC703 Q704 Q253 IC251 Q251 IC705 Q252 IC704 Q706 IC706 Q707 Q711 IC702 IC701 IC707 Q712 Q701 Q714 Q805 Q809 Q708 Q807 Q808 Q713 Q702 Q806 Q703 Q710

ADJ: VR251 VR252 TC701



IC703
8.5V
IC704
IC705
IC706
IC702
IC252
IC251
IC707
IC701
CN251
CN708
CN706
CN705
CN707
CN801
CN702
INV701
TC701
X701
BZ701
VR251
VR252
Q251
Q252
Q253
Q701
Q702
Q703
Q704
Q706
Q707
Q708
Q710
Q711
Q712
Q713
Q714
Q805
Q806
Q807
Q808
Q809
D251
D252
D253
D701
D702
D703
D704
D706
D707
D708
D709
D710
D711
D714
D715
D716
D718
D719
D720
D721
L701

TO CASSETTE MECHANISM ASSY

TO AMP P.C. BOARD CN721

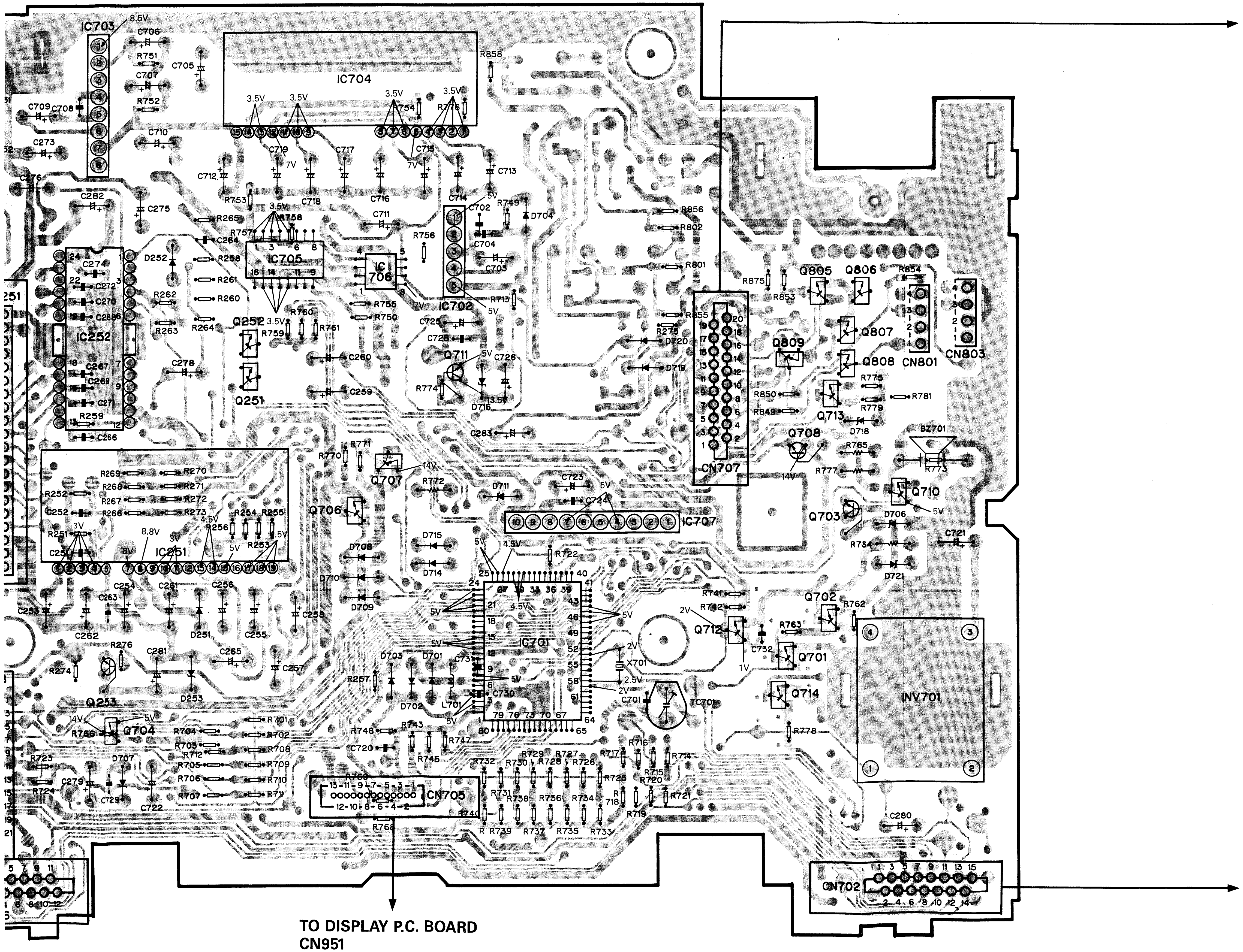
TO RIGHT SWITCH P.C. BOARD CN952

TO DISPLAY P.C. BOARD CN951

ITROL UNIT

IC252 Q704
IC703 Q253 IC251
Q251 Q252
IC705
IC704 IC706
Q706 Q707
Q711
IC702
IC701
IC707
Q712
Q701
Q714
Q805 Q807
Q809 Q808
Q708 Q713
Q702
Q806
Q703
Q710

TC701


A
B
C
D
IC703
IC704
IC705
IC706
IC702
IC252
IC251
IC707
IC701
Q252
Q251
Q711
Q707
Q706
Q253
Q704
Q805
Q806
Q807
Q808
Q809
Q713
Q708
Q703
Q710
Q702
Q712
Q701
Q714
CN707
CN801
CN803
CN705
CN702
INV701
TC701
X701
BZ701
8.5V
3.5V
7V
5V
14V
4.5V
2V
2.5V
1V
13.5V
8.8V
3V
8V

TO AMP P.C. BOARD
CN903

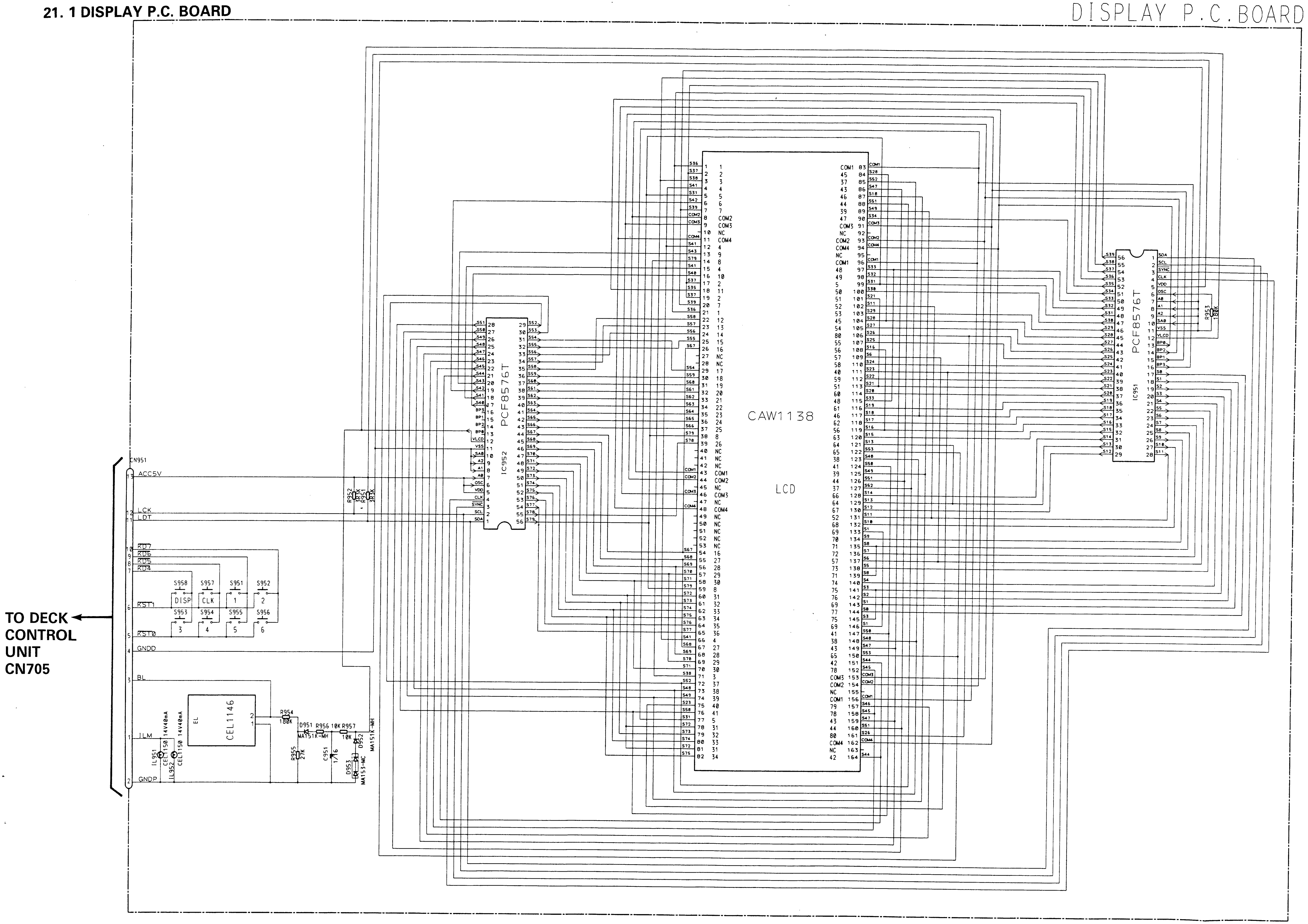
TO LEFT SWITCH
P. C. BOARD CN953

TO DISPLAY P.C. BOARD
CN951

Fig. 61

21. CIRCUIT DIAGRAM AND P.C.BOARD PATTERN

21. 1 DISPLAY P.C. BOARD


DISPLAY P.C.BOARD
CAW1138
LCD
PCF8576T
IC952
PCF8576T
IC951
R953 180K
CN951
ACC5V
LCK
LDT
KD7
KD6
KD5
KD4
S958 DISP
S957 CLK
S951 1
S952 2
S953 3
S954 4
S955 5
S956 6
RST1
RST0
GNDD
BL
ILM
GNDP
R952
R951
EL
CEL1146
R954 180K
D951 MA151K-MH
R956 10K
R957 10K
R955 27K
C951 1/16
D952 MA151K-MH
D953 MA153-MC
IL951 CEL150 14V40mA
IL952 CEL150 14V40mA
TO DECK CONTROL UNIT CN705

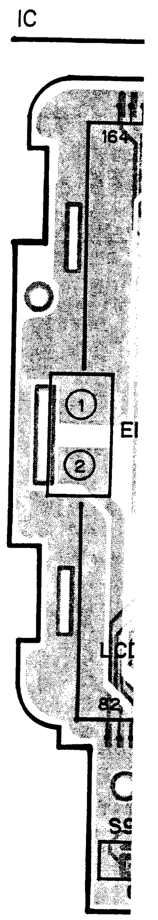


Fig. 62

DISPLAY P.C.BOARD

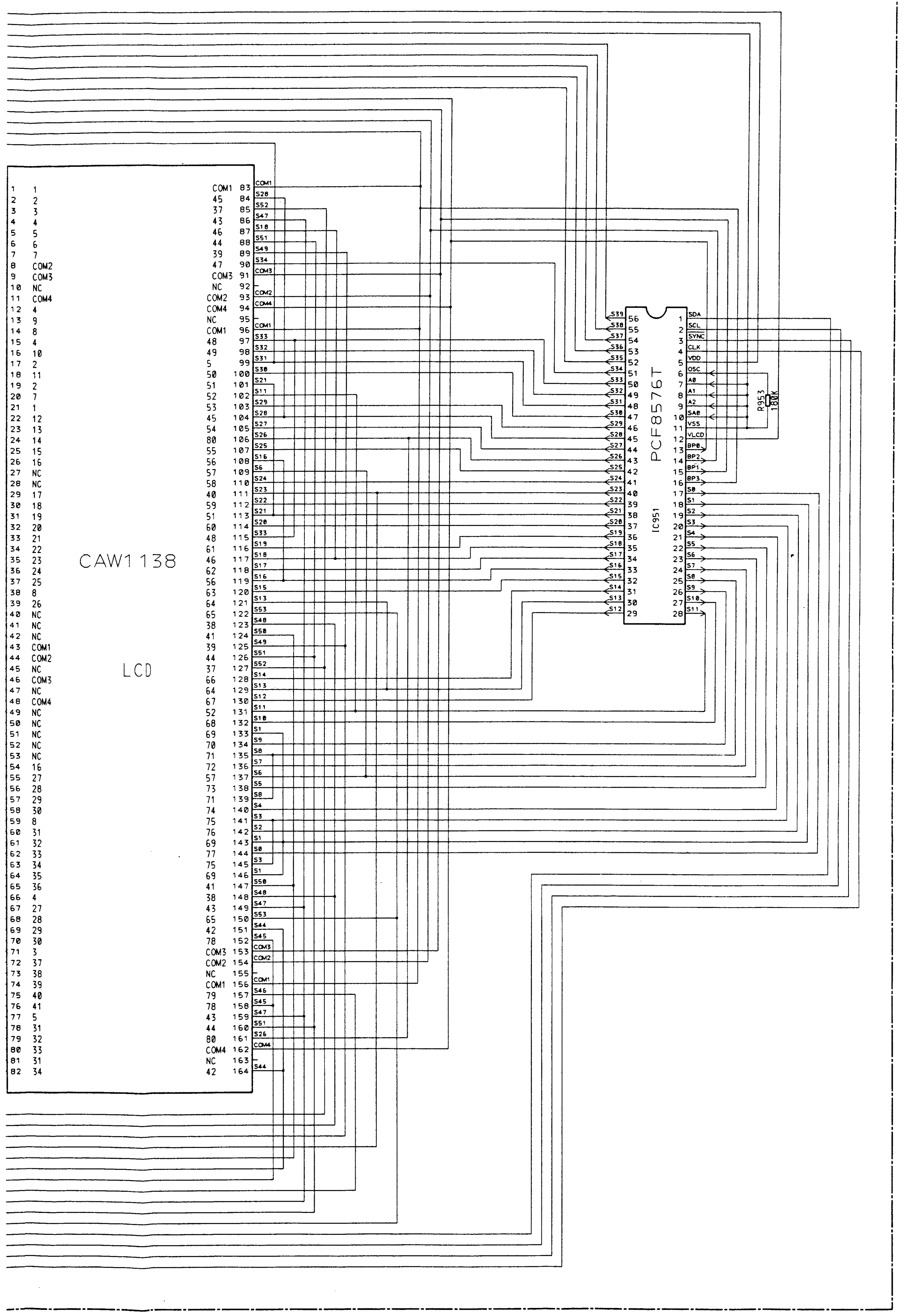

CAW1138
LCD
PCF8576T
IC951
R953
180K

Fig. 62

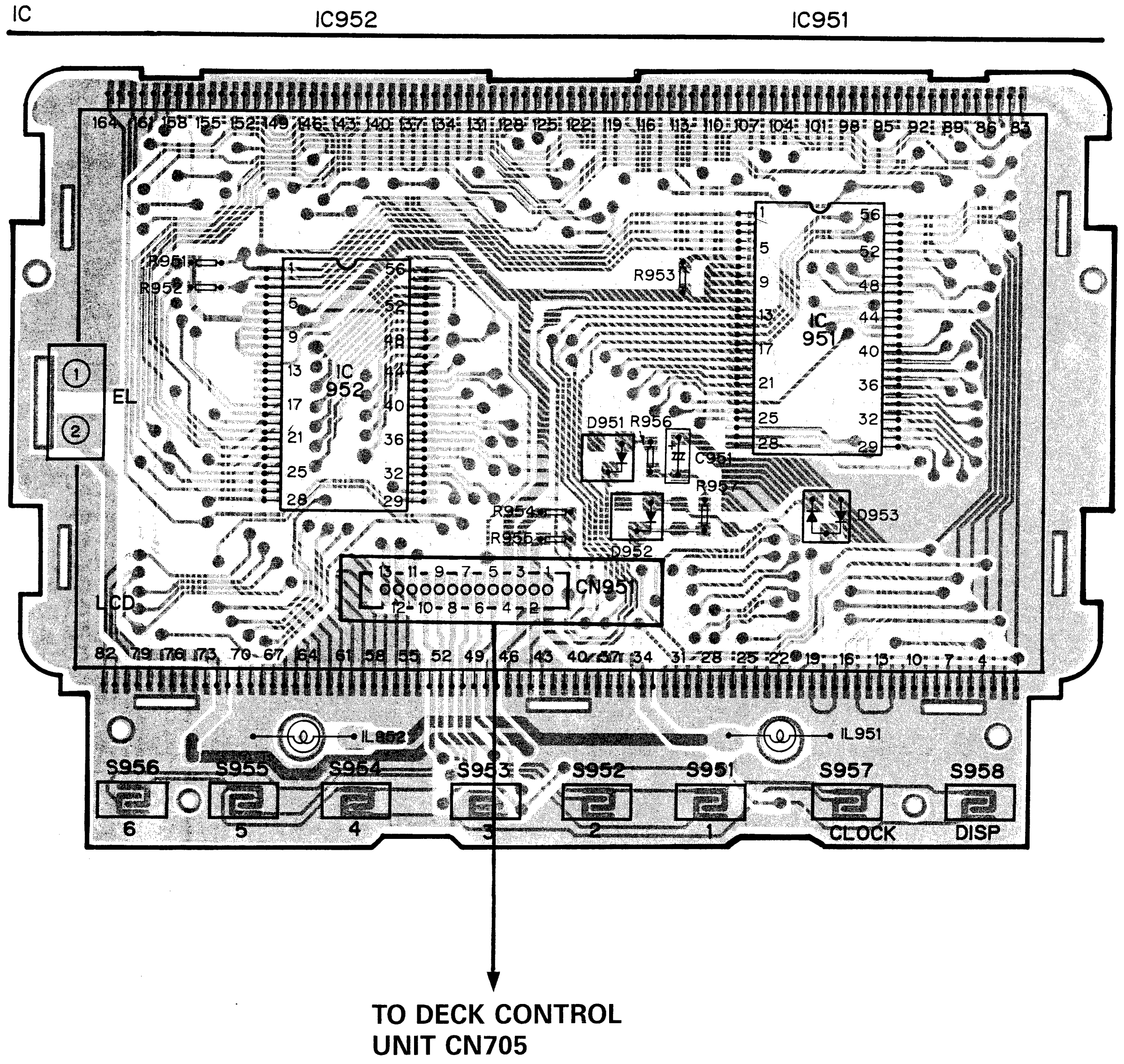

IC
IC952
IC951
EL
LCD
CN951
D951
D952
D953
R952
R953
R954
R955
R956
R957
C951
IL951
IL952
S956
S955
S954
S953
S952
S951
S957
S958
CLOCK
DISP
TO DECK CONTROL UNIT CN705

Fig. 63

21. 2 LEFT SWITCH P.C. BOARD

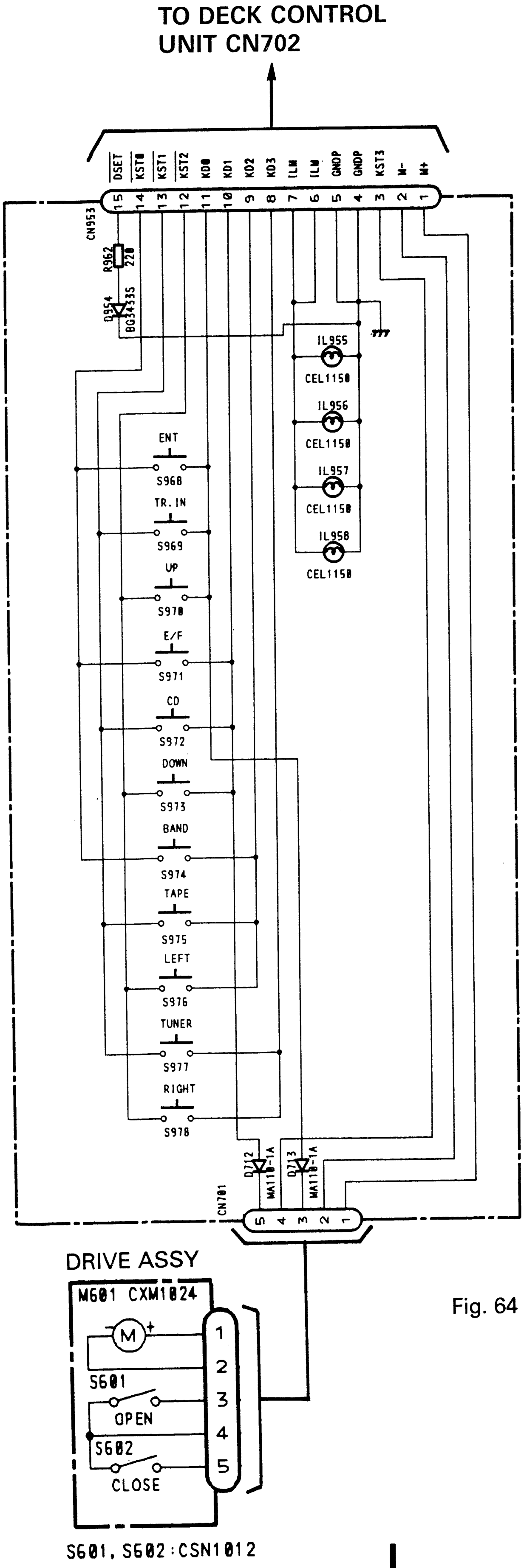

TO DECK CONTROL
UNIT CN702
CN953
DSET
KST0
KST1
KST2
KD0
KD1
KD2
KD3
ILM
ILM
GNDP
GNDP
KST3
M-
M+
15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
R962 220
D954 BG3433S
IL955
CEL1150
IL956
CEL1150
IL957
CEL1150
IL958
CEL1150
ENT
S968
TR. IN
S969
UP
S970
E/F
S971
CD
S972
DOWN
S973
BAND
S974
TAPE
S975
LEFT
S976
TUNER
S977
RIGHT
S978
D712 MA110-1A
D713 MA110-1A
CN701
5 4 3 2 1
DRIVE ASSY
M601 CXM1024
M
+
S601
OPEN
S602
CLOSE
1
2
3
4
5
S601, S602 : CSN1012

Fig. 64

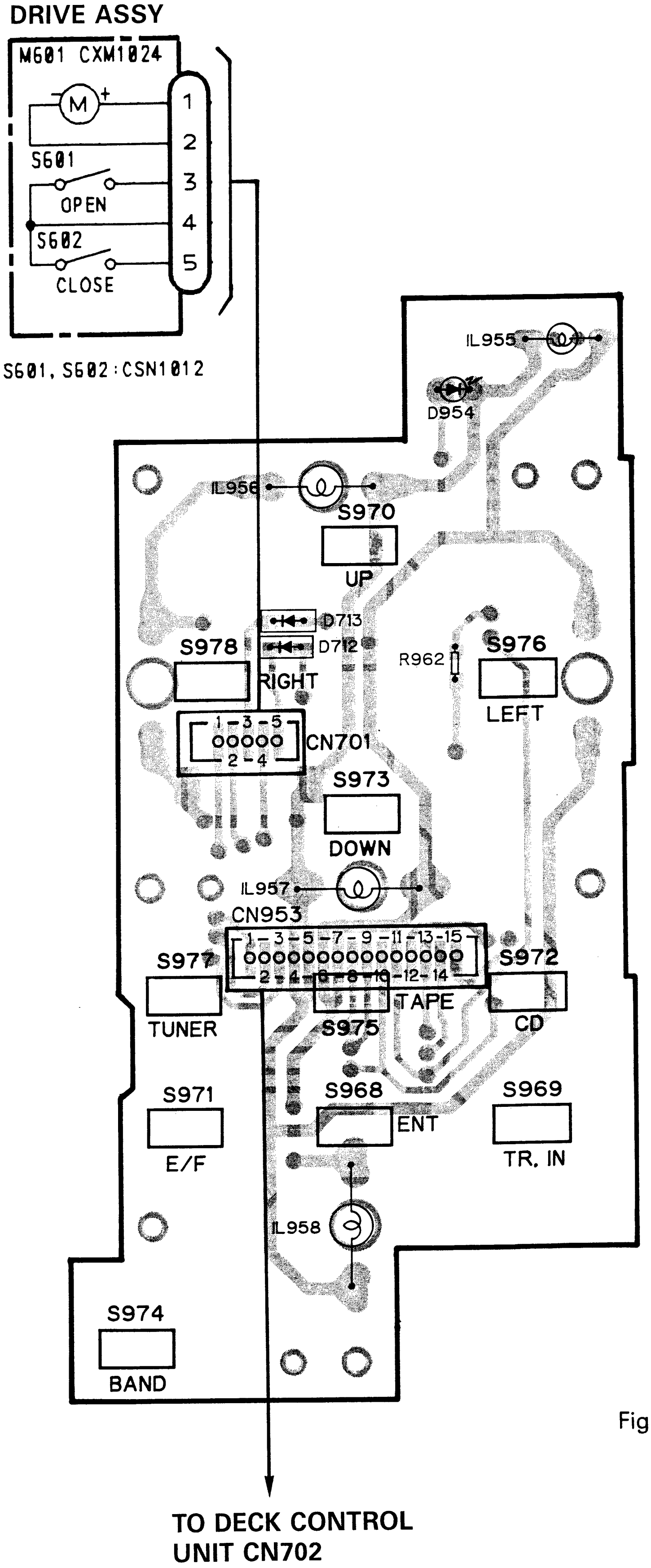

DRIVE ASSY
M601 CXM1024
M
+
S601
OPEN
S602
CLOSE
1
2
3
4
5
S601, S602 : CSN1012
IL955
D954
IL956
S970
UP
D713
D712
S978
RIGHT
R962
S976
LEFT
CN701
1-3-5
2-4
S973
DOWN
IL957
CN953
1-3-5-7-9-11-13-15
2-4-6-8-10-12-14
S977
TUNER
S975
TAPE
S972
CD
S971
E/F
S968
ENT
S969
TR. IN
IL958
S974
BAND
TO DECK CONTROL
UNIT CN702

Fig. 65

21. 3 RIGHT SWITCH P.C. BOARD

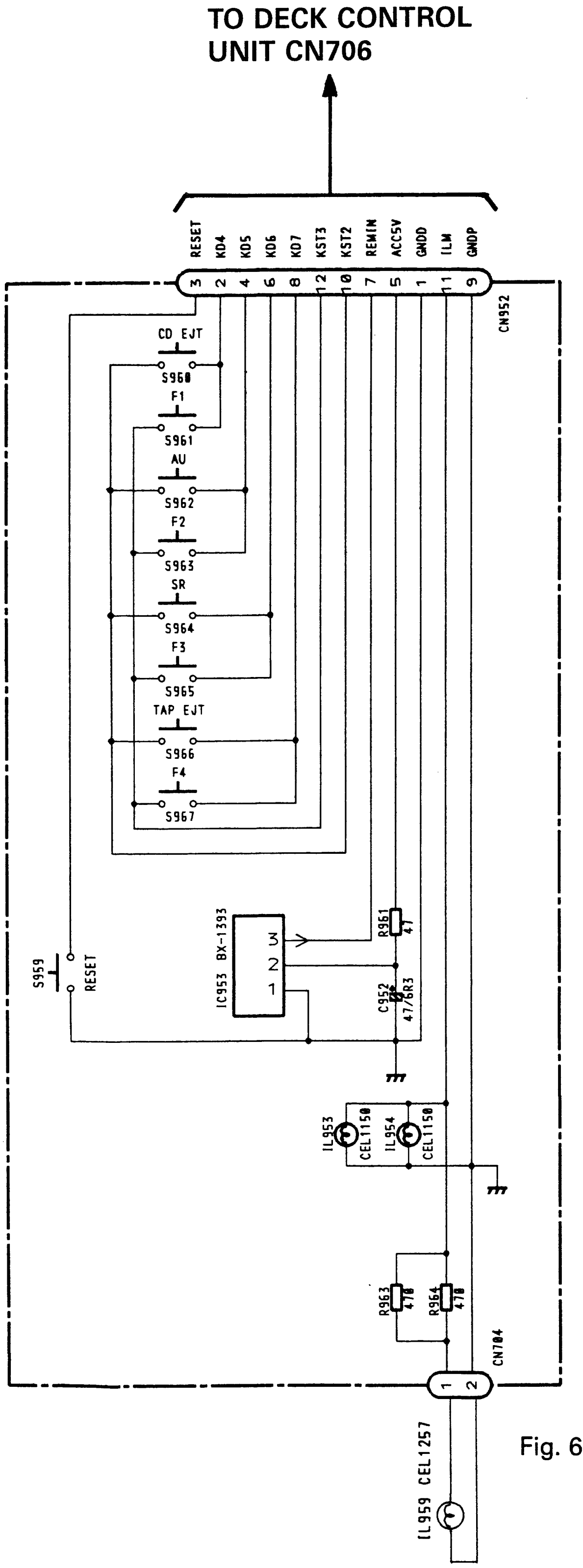

TO DECK CONTROL
UNIT CN706
RESET 3
KD4 2
KD5 4
KD6 6
KD7 8
KST3 12
KST2 10
REMIN 7
ACC5V 5
GNDD 1
ILM 11
GNDP 9
CN952
CD EJT S960
F1 S961
AU S962
F2 S963
SR S964
F3 S965
TAP EJT S966
F4 S967
S959 RESET
IC953 BX-1393
3
2
1
R961 47
C952 47/6R3
IL953 CEL1150
IL954 CEL1150
R963 470
R964 470
CN704
1 2
IL959 CEL1257

Fig. 66

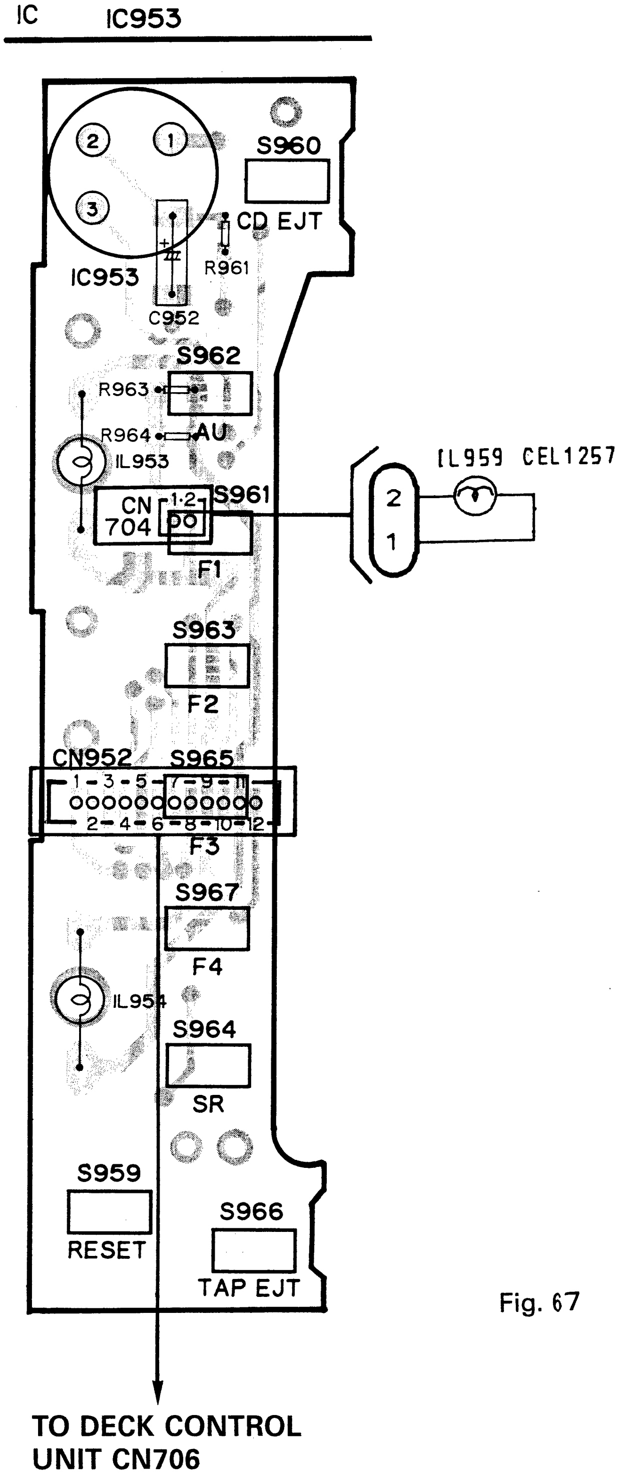
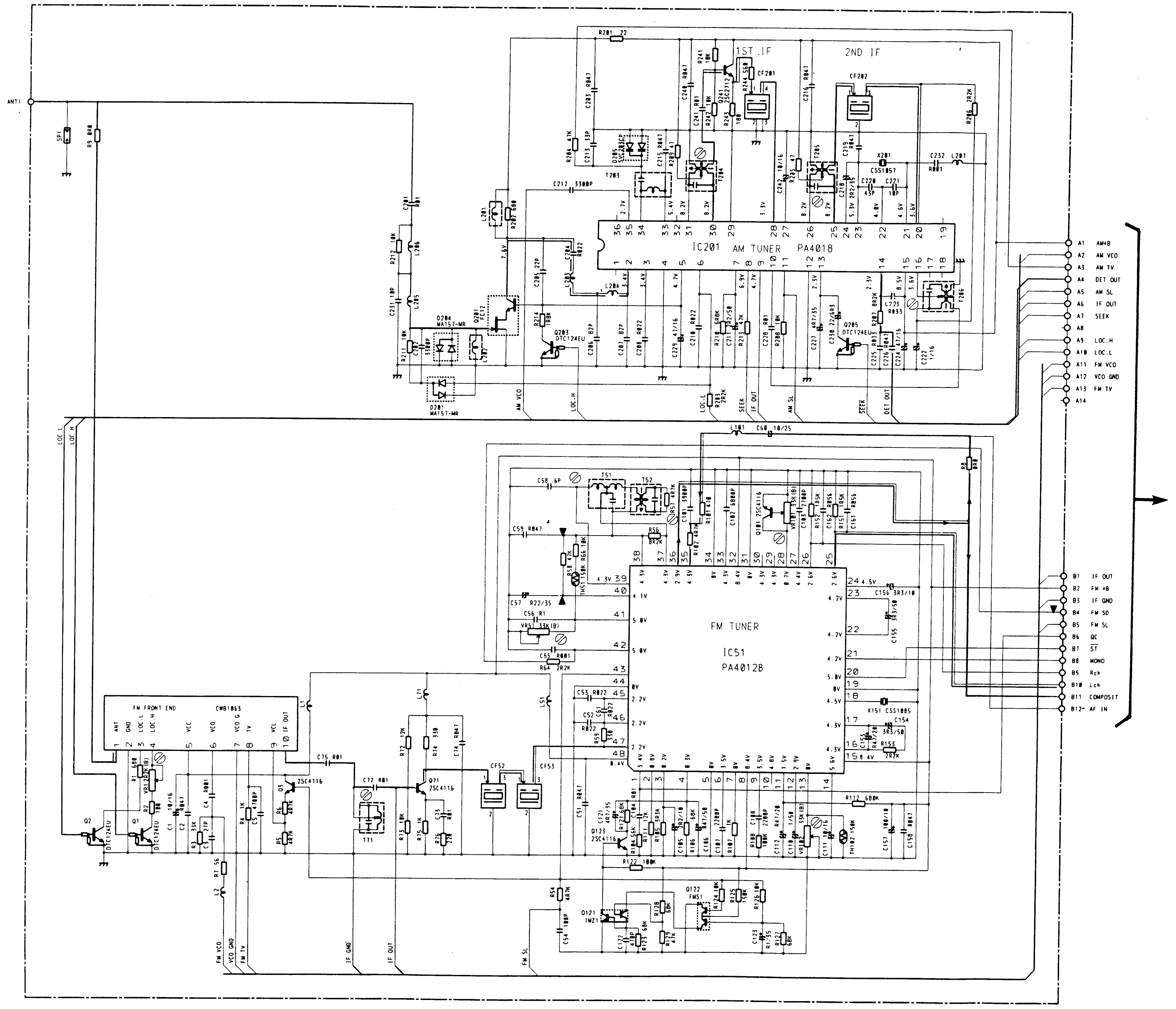

IC
IC953
S960
CD EJT
R961
IC953
C952
S962
R963
R964
AU
IL953
CN 704
1·2
S961
F1
IL959 CEL1257
2
1
S963
F2
CN952
S965
1 - 3 - 5 - 7 - 9 - 11
2 - 4 - 6 - 8 - 10 - 12
F3
S967
F4
IL954
S964
SR
S959
RESET
S966
TAP EJT
TO DECK CONTROL
UNIT CN706

Fig. 67

21. 4 FM/AM UNIT


ANT1
1ST IF
2ND IF
IC201 AM TUNER PA4018
FM TUNER
IC51
PA4012B
FM FRONT END CWB1865
A1 AM+B
A2 AM VCO
A3 AM TV
A4 DET OUT
A5 AM SL
A6 IF OUT
A7 SEEK
A8
A9 LOC.H
A10 LOC.L
A11 FM VCO
A12 VCO GND
A13 FM TV
A14
B1 IF OUT
B2 FM +B
B3 IF GND
B4 FM SD
B5 FM SL
B6 QC
B7 ST
B8 MONO
B9 Rch
B10 Lch
B11 COMPOSIT
B12 AF IN
FM VCO
VCO GND
FM TV
IF GND
IF OUT
FM SL

TO AMP P. C. BOARD CN501

NOTE

▭ Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

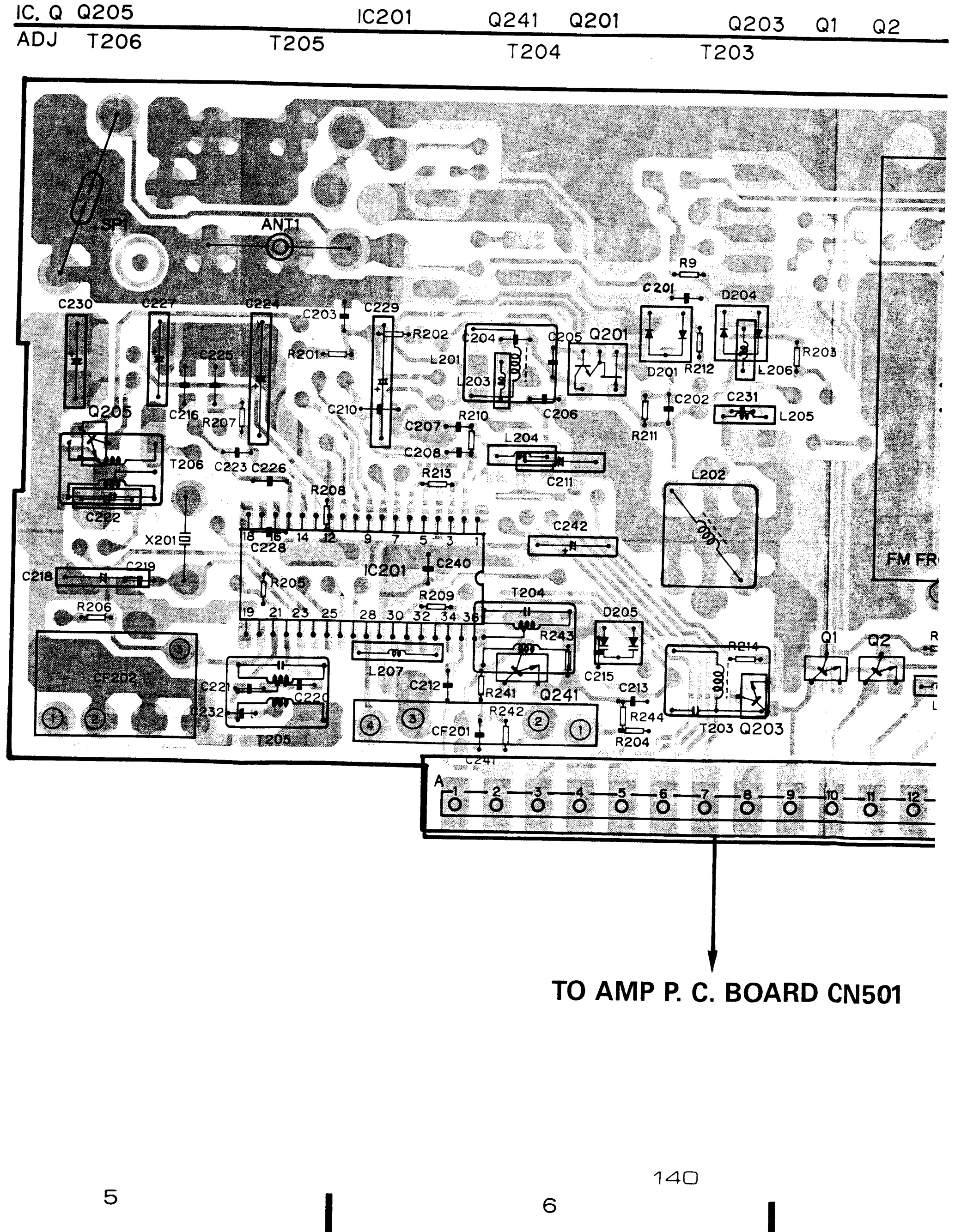
⊣⊢ Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor
and capacitor fixed values
are expressed as
2.2→2R2
0.022→R022

Fig. 68

FM/AM UNIT IC201

1	2	3	4	5	6	7	8	9
	3.4V	3.4V	0V	4.7V			6.9V	4.7V
10	11	12	13	14	15	16	17	18
		0V	2.3V	2.3V	8.5V	3.6V		
19	20	21	22	23	24	25	26	27
	3.6V	4.6V	4.0V	5.3V		8.2V	8.2V	
28	29	30	31	32	33	34	35	36
3.3V	0V	8.2V	8.2V		5.4V		2.7V	


IC, Q Q205 IC201 Q241 Q201 Q203 Q1 Q2
ADJ T206 T205 T204 T203
SP1
ANT1
C230
C227
C224
C203
C229
R202
C201
R9
D204
C225
R201
L201
C204
C205
Q201
D201
R212
L206
R203
C231
C202
L205
Q205
C216
R207
C210
C207
R210
C206
R211
T206
C223
C226
C208
L204
R213
C211
L202
C232
R208
X201
C228
C242
C218
C219
IC201
C240
FM FR
R206
R205
R209
T204
CF202
R243
D205
Q1
Q2
C221
C220
L207
R214
C232
C212
C215
C213
R241
Q241
R242
R244
T205
CF201
R204
T203
Q203
C241
A

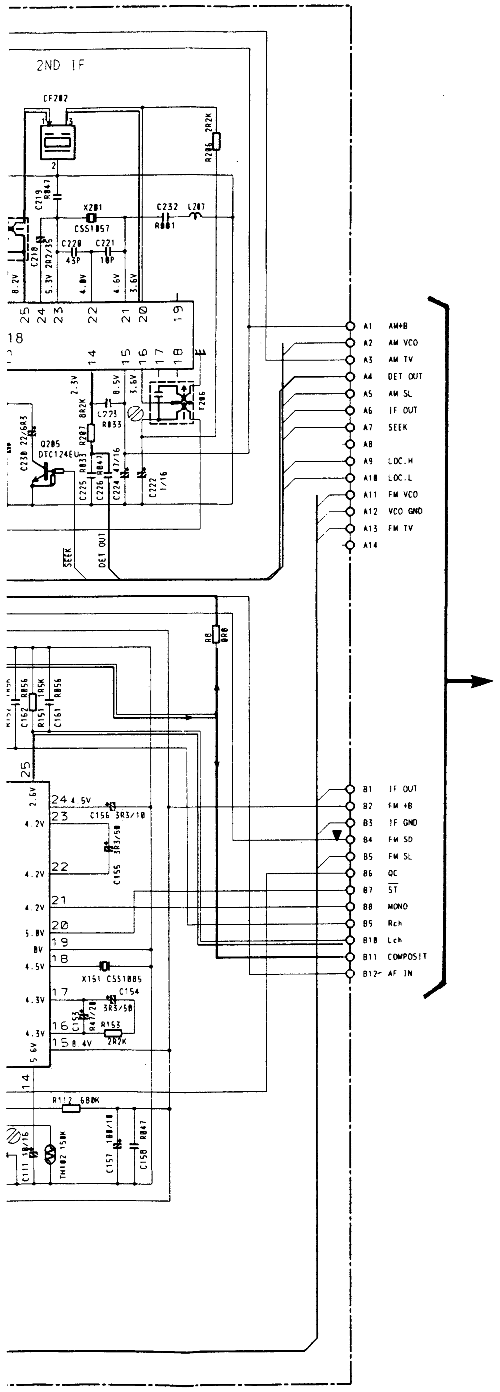
TO AMP P. C. BOARD CN501

FM/AM UNIT IC201

1	2	3	4	5	6	7	8	9
	3.4V	3.4V	0V	4.7V			6.9V	4.7V
10	11	12	13	14	15	16	17	18
		0V	2.3V	2.3V	8.5V	3.6V		
19	20	21	22	23	24	25	26	27
	3.6V	4.6V	4.0V	5.3V		8.2V	8.2V	
28	29	30	31	32	33	34	35	36
3.3V	0V	8.2V	8.2V		5.4V		2.7V	

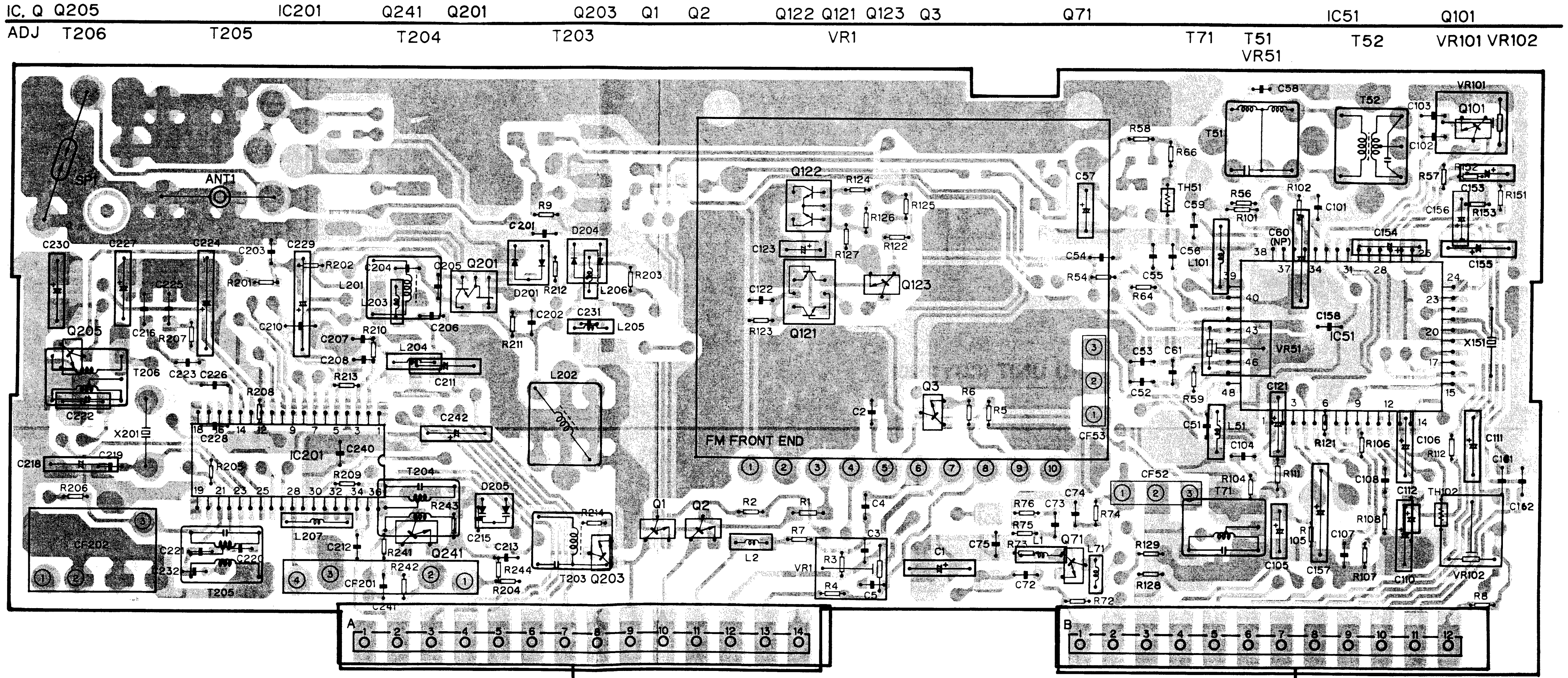
FM/AM UNIT IC51

1	2	3	4	5	6	7	8
3.4V	0.8V	0.2V	0.3V	0V	3.5V	0V	8.4V
9	10	11	12	13	14	15	16
3.5V	4.8V	1.5V	2.9V	0V	5.6V	8.4V	4.3V
17	18	19	20	21	22	23	24
4.3V	4.5V	0V	5.0V	4.2V	4.2V	4.2V	4.5V
25	26	27	28	29	30	31	32
2.6V	2.6V	4.4V	0.7V	4.3V	4.3V	0V	8.4V
33	34	35	36	37	38	39	40
4.3V	0V	4.3V	2.9V	4.3V	4.3V	4.3V	4.1V
41	42	43	44	45	46	47	48
5.0V	5.0V		0V	2.2V	2.2V	2.2V	0.4V


2ND IF
CF202
X201
Q205
DTC124ES
X151 CSS1085
A1 AM+B
A2 AM VCO
A3 AM TV
A4 DET OUT
A5 AM SL
A6 IF OUT
A7 SEEK
A8
A9 LOC.H
A10 LOC.L
A11 FM VCO
A12 VCO GND
A13 FM TV
A14
B1 IF OUT
B2 FM +B
B3 IF GND
B4 FM SD
B5 FM SL
B6 QC
B7 ST
B8 MONO
B9 Rch
B10 Lch
B11 COMPOSIT
B12 AF IN
SEEK
DET OUT

TO AMP P. C. BOARD CN501

Fig. 68

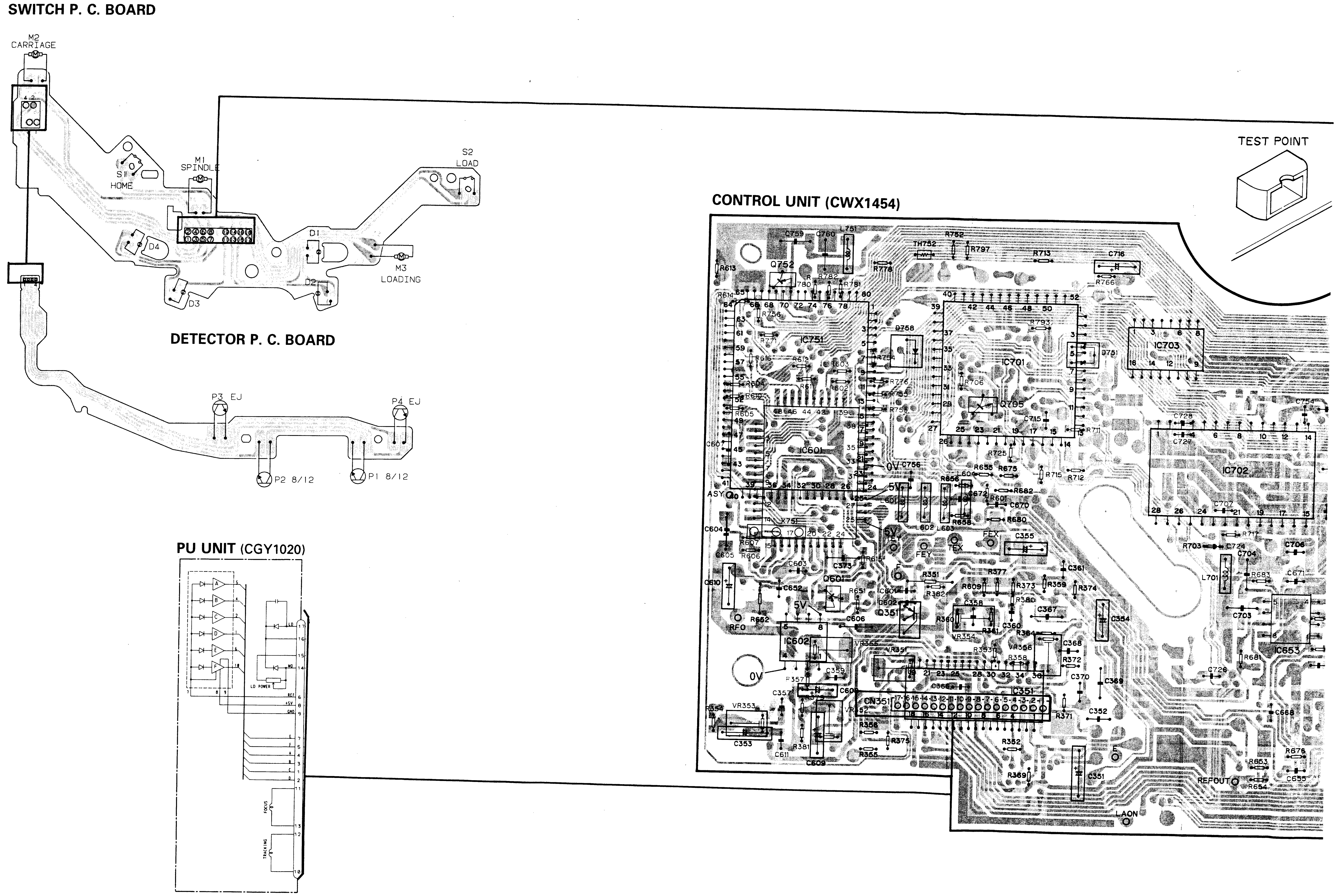

IC, Q Q205 IC201 Q241 Q201 Q203 Q1 Q2 Q122 Q121 Q123 Q3 Q71 IC51 Q101
ADJ T206 T205 T204 T203 VR1 T71 T51 VR51 T52 VR101 VR102
ANT1
FM FRONT END
IC201
IC51
Q205
Q241
Q201
Q203
Q122
Q121
Q123
Q71
Q101
T206
T205
T204
T203
T71
T51
T52
L202
VR1
VR51
VR101
VR102
CF201
CF202
CF52
CF53
X201
X151
TH51
TH102
A
B

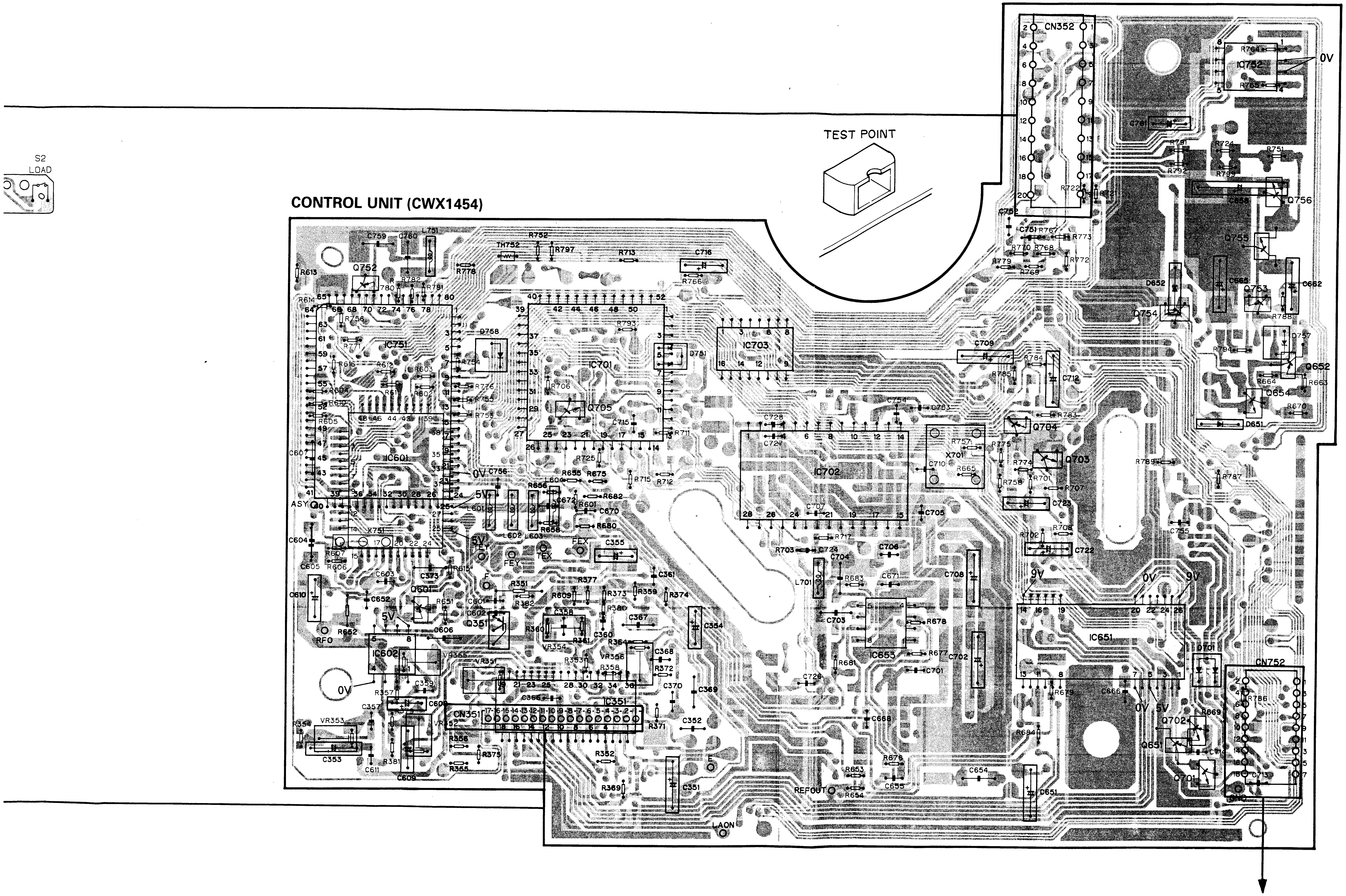
TO AMP P. C. BOARD CN501

TO AMP P. C. BOARD CN501

Fig. 69

21. 5 CD MECHANISM MODULE


SWITCH P. C. BOARD
M2 CARRIAGE
M1 SPINDLE
S1 HOME
S2 LOAD
D1
D2
D3
D4
M3 LOADING
DETECTOR P. C. BOARD
P3 EJ
P4 EJ
P2 8/12
P1 8/12
PU UNIT (CGY1020)
LD POWER
FOCUS
TRACKING
CONTROL UNIT (CWX1454)
TEST POINT
IC751
IC601
IC701
IC702
IC703
IC602
IC351
IC653
CN351
Q752
Q705
Q601
Q351
X751
L751
L701
VR353
VR354
VR355
VR351
VR352
RFO
FEY
FEX
TEX
ASY
REFOUT
LAON
0V
5V


S2
LOAD
CONTROL UNIT (CWX1454)
TEST POINT
CN352
IC752
0V
Q756
Q755
Q752
Q753
Q754
D652
C665
C662
D757
Q652
Q654
D651
IC751
IC601
IC701
IC703
Q705
D758
D751
IC702
X701
Q704
Q703
C709
C712
C722
C723
TH752
C716
L751
X751
5V
0V
ASY
FEY
TEX
FEX
C355
Q601
Q351
IC602
RFO
VR353
C353
VR354
VR355
VR351
VR356
VR352
CN351
IC351
C354
C369
C351
E
REFOUT
LAON
L701
IC653
IC651
9V
C702
C708
C654
C651
Q702
Q651
Q701
D701
CN752
GND

TO AMP P. C. BOARD CN722

Fig. 70

ADJ	IC, Q
	IC752
	Q756
	Q755
	Q752
	Q753
	Q754
	IC703
	IC701
	IC751
	Q652
	Q705
	Q654
	Q653
	Q704
	IC601
	Q703
	IC702
	IC653
	Q601
VR354	Q351
VR356	IC651
VR355	IC602
VR351	IC705
	IC351
	Q702
VR352	Q651
VR353	
	Q701

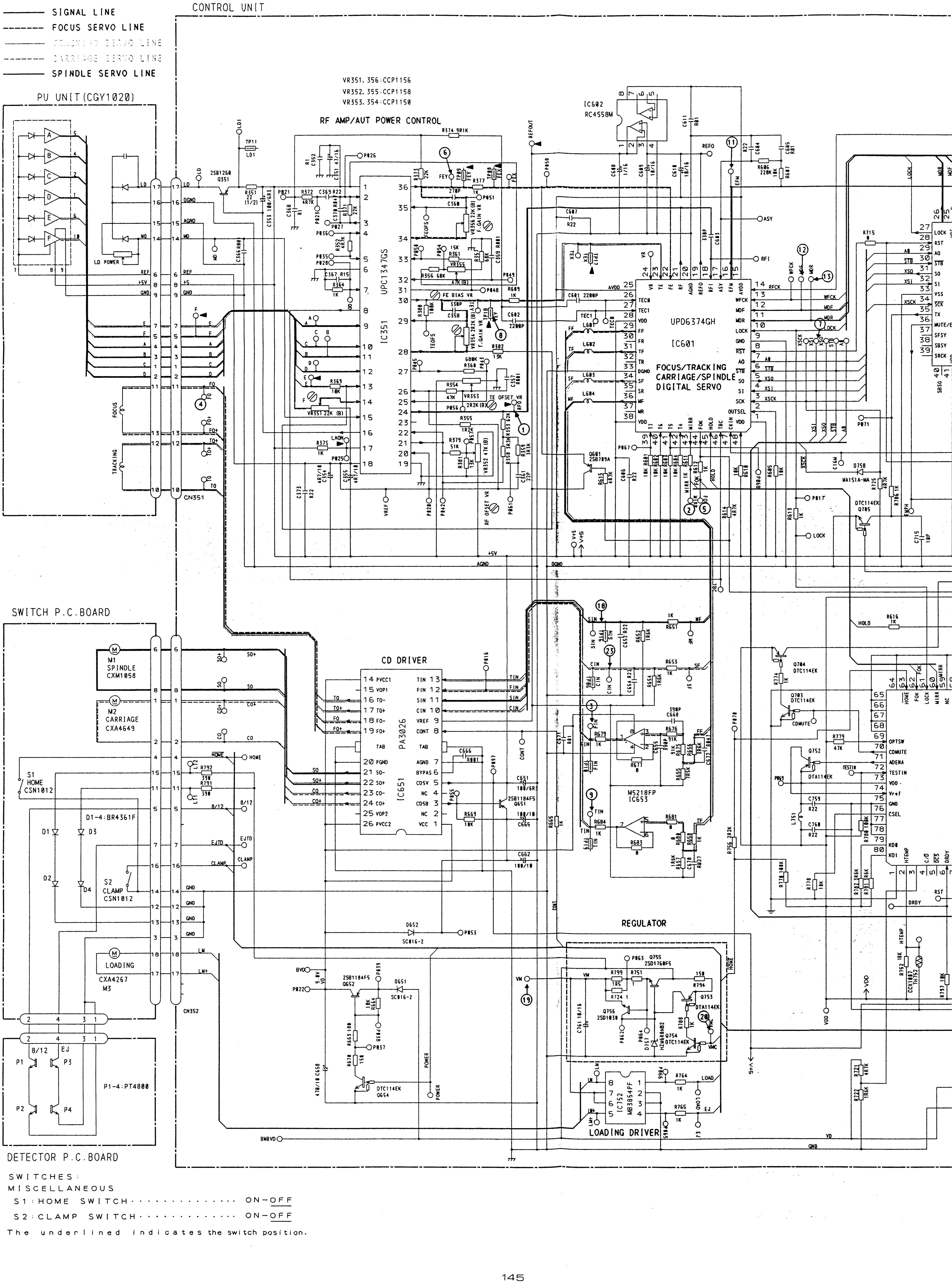
A

B

C

D

——— SIGNAL LINE
- - - - FOCUS SERVO LINE
——— TRACKING SERVO LINE
- - - - CARRIAGE SERVO LINE
——— SPINDLE SERVO LINE


CONTROL UNIT
PU UNIT(CGY1020)
LD POWER
FOCUS
TRACKING
CN351
VR351, 356:CCP1156
VR352, 355:CCP1158
VR353, 354:CCP1150
RF AMP/AUT POWER CONTROL
UPC1347GS
IC351
2SB1260 Q351
FE BIAS VR
F.GAIN VR
T.GAIN VR
TE OFSET VR
RF OFSET VR
IC602
RC4558M
UPD6374GH
IC601
FOCUS/TRACKING
CARRIAGE/SPINDLE
DIGITAL SERVO
Q601 2SB709A
MA151A-MA D750
DTC114EK Q705
SWITCH P.C.BOARD
M1 SPINDLE CXM1058
M2 CARRIAGE CXA4649
S1 HOME CSN1012
D1-4:BR4361F
S2 CLAMP CSN1012
LOADING CXA4267 M3
CN352
CD DRIVER
PA3026
IC651
2SB1184FS Q651
D652 SC016-2
2SB1184FS Q652
D651 SC016-2
DTC114EK Q654
M5218FP IC653
REGULATOR
Q755 2SD1760FS
Q756 2SD1030
Q753 DTA114EK
Q754 DTC114EK
LOADING DRIVER
MB3854PF IC752
Q704 DTC114EK
Q703 DTC114EK
Q752 DTA114EK
DETECTOR P.C.BOARD
P1-4:PT4800

SWITCHES:
MISCELLANEOUS
S1:HOME SWITCH·············· ON-OFF
S2:CLAMP SWITCH············· ON-OFF
The underlined indicates the switch position.

NOTE :

Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022

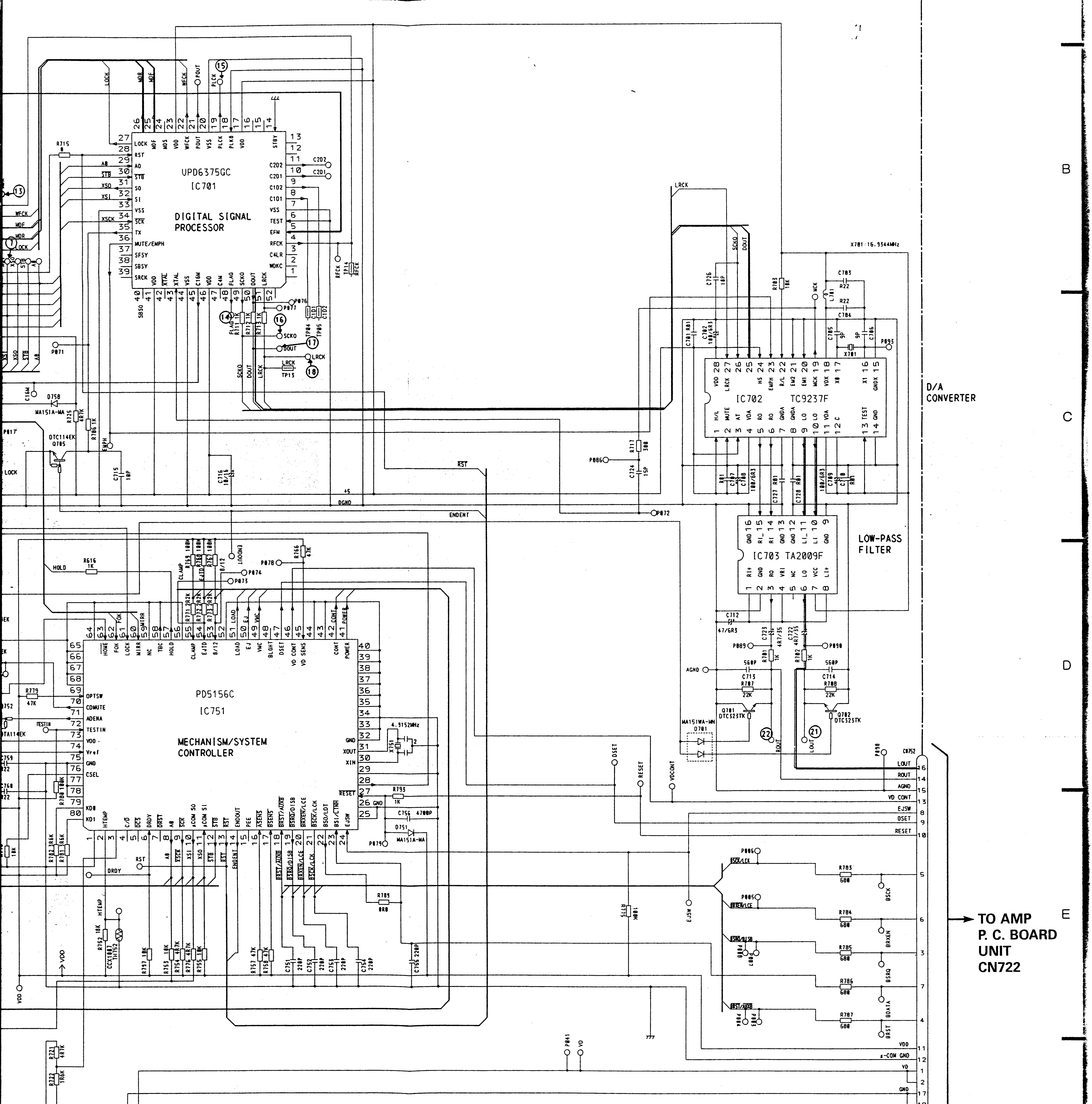
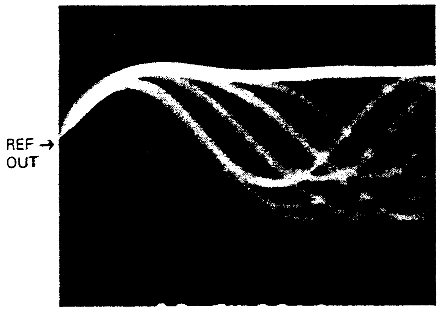

UPD6375GC
IC701
DIGITAL SIGNAL PROCESSOR
PD5156C
IC751
MECHANISM/SYSTEM CONTROLLER
IC702 TC9237F
D/A CONVERTER
IC703 TA2009F
LOW-PASS FILTER
X701 16.9344MHz
X751 4.9152MHz
Q701 DTC523TK
Q702 DTC523TK
Q705 DTC114EK
D701 MA151WA-MN
D751 MA151A-MA
D758 MA151A-MA
TH752 CCX1007
CN752
LOUT
ROUT
AGND
VD CONT
EJSW
DSET
RESET
VDD
μ-COM GND
VD
GND
TO AMP P. C. BOARD UNIT CN722
A
B
C
D
E
F
5
6
7
8
9

Fig. 71

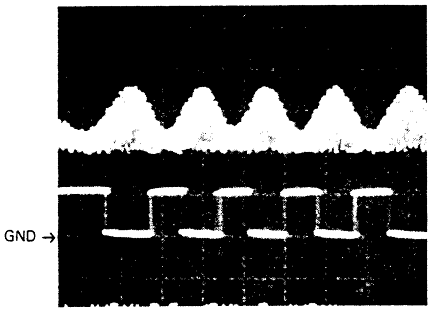
• Wave Forms

Note: 1. The encircled numbers denote measuring pointes in the circuit diagram.
2. Reference voltage
REFOUT: 2.5V

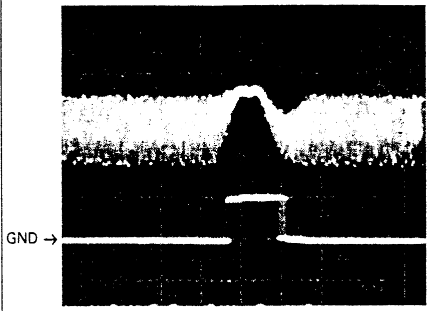
① RFO 0.5V/div. 0.2μs/div.
Normal mode: play



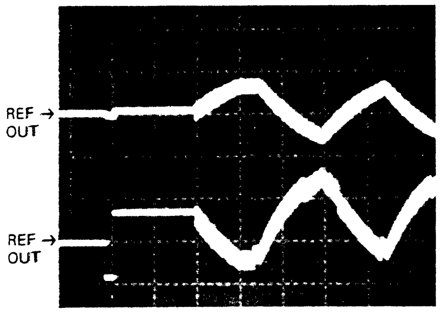
① CH1: RFO 1V/div. 0.5ms/div.
② CH2: MIRR 5V/div.
Test mode: Tracking open



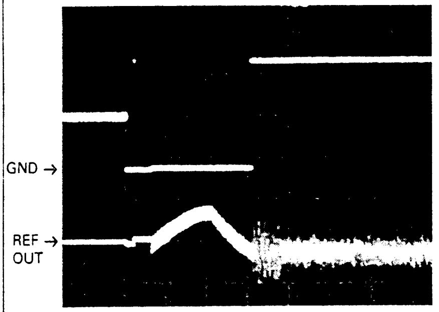
① CH1: RFO 1V/div. 0.5ms/div.
② CH2: MIRR 5V/div.
Normal mode: The defect part passes 800μm.



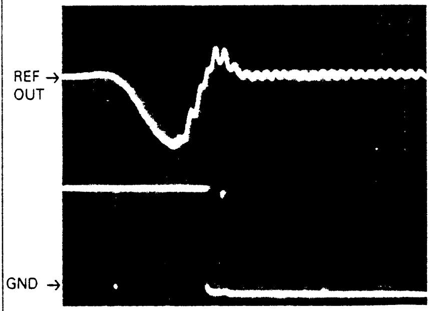
③ CH1: FIN 1V/div. 0.5s/div.
④ CH2: FO 2V/div.
Test mode: Connect the FEX to REFOUT.
Focus search is performed.



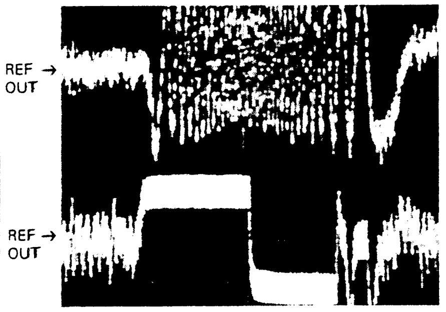
⑤ CH1: FOK 2V/div. 0.5s/div.
③ CH2: FIN 1V/div.
Normal mode: Focus close



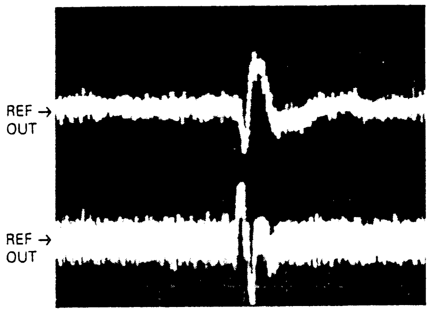
⑥ CH1: FEY 1V/div. 2ms/div.
⑦ CH2: XSO 2V/div.
Normal mode: Focus close
(The lens moves DOWN → UP)



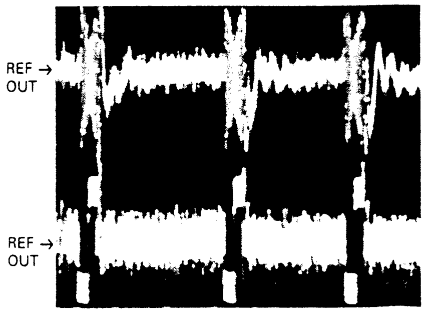
⑧ CH1: TEY 0.5V/div. 0.5ms/div.
⑨ CH2: TIN 0.5V/div.
Normal mode: Brake wave from when track search is perfromed.



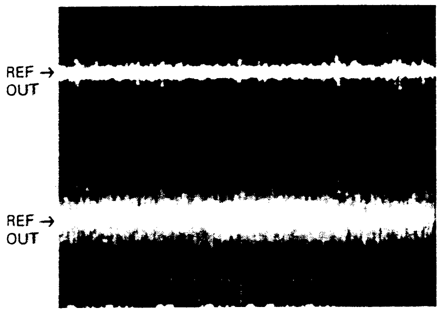
⑧ CH1: TEY 1V/div. 1ms/div.
⑨ CH2: TIN 0.5V/div.
Normal mode: single jump



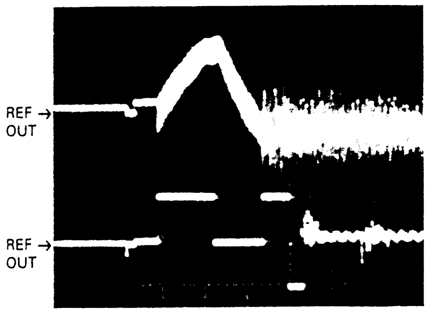
⑧ CH1: TEY 0.5V/div. 5ms/div.
⑨ CH2: TIN 0.5V/div.
Normal mode: Track search
(32 track jump)



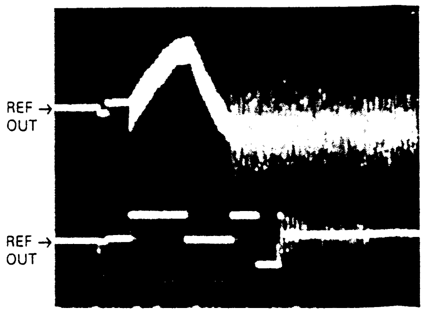
⑥ CH1: FEY 0.2V/div. 20ms/div.
③ CH2: FIN 0.5V/div.
Normal mode: Play



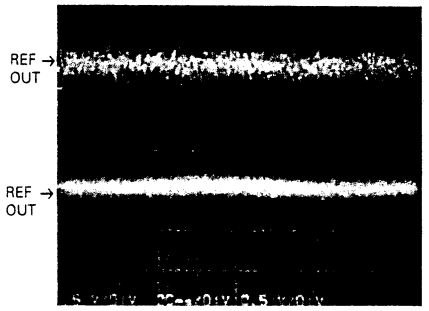
③ CH1: FIN 0.5V/div. 0.5s/div.
⑩ CH2: SIN 1V/div.
Normal mode: Focus search
(12cm disc)



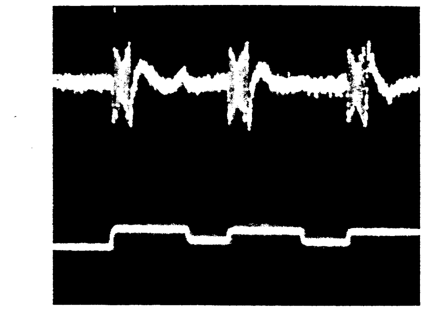
③ CH1: FIN 0.5V/div. 0.5s/div.
⑩ CH2: SIN 1V/div.
Normal mode: Focus search
(8cm disc)



⑧ CH1: TEY 0.5V/div. 20ms/div.
⑨ CH2: TIN 0.5V/div.
Normal mode: Play

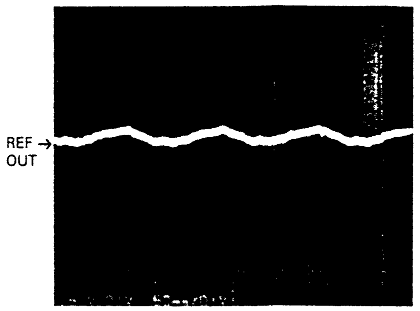


⑧ CH1: TEY 1V/div. 5ms/div.
㉓ CH2: CIN
Normal mode: Search



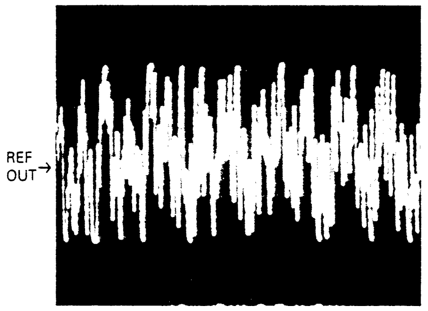
⑩ SIN 0.5V/div. 50ms/div.

Normal mode: Play (12cm disc)



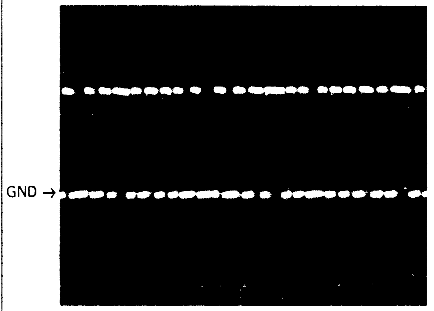
⑩ SIN 0.5V/div. 10ms/div.

Search (12cm disc)

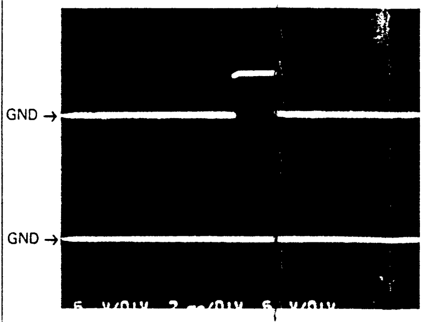


⑪ EFM 2V/div. 5μs/div.

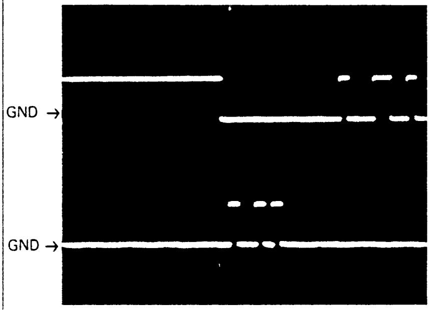
Play



⑫ CH1: MDF 5V/div. 2ms/div.
⑬ CH2: MDR 5V/div.
Play

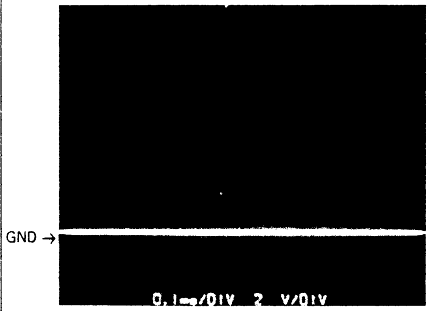


⑫ CH1: MDF 5V/div. 10ms/div.
⑬ CH2: MDR 5V/div.
Search



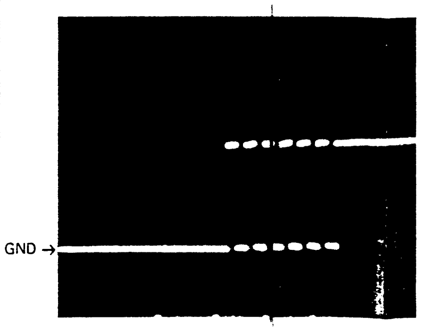
⑭ FLAG 2V/div. 0.1ms/div.

Play



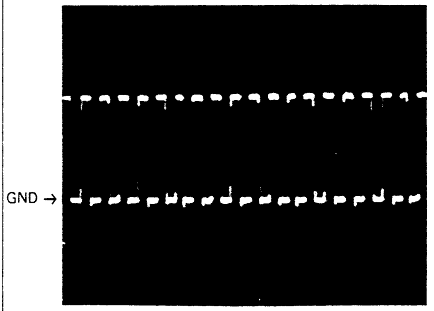
⑭ FLAG 2V/div. 0.1ms/div.

Search



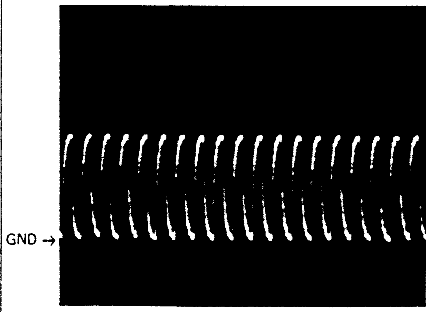
⑮ PLCK 2V/div. 0.5μs/div.

Play



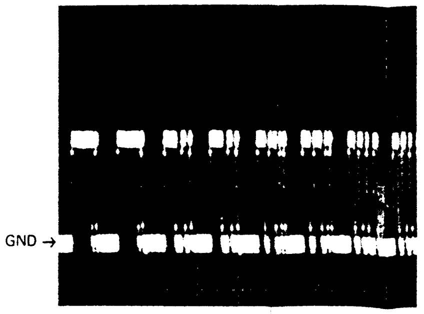
⑯ SCKO 2V/div. 1μs/div.

Play



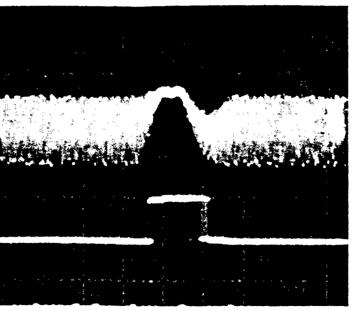
⑰ Dout 2v/div. 10μs/div.

Play

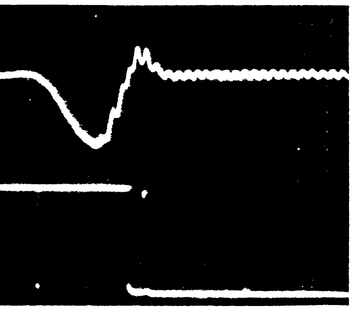


ring pointes in the circuit diagram.

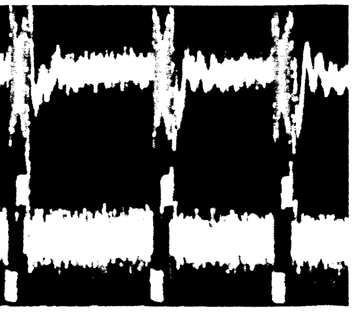
I1: RFO 1V/div. 0.5ms/div.
I2: MIRR 5V/div.
rmal mode: The defect part passes 800μm.



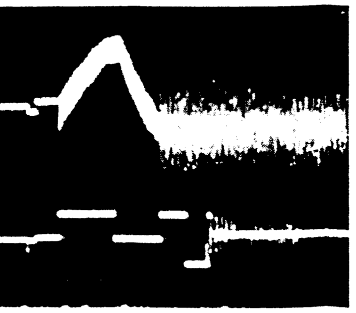
I1: FEY 1V/div. 2ms/div.
I2: XSO 2V/div.
rmal mode: Focus close
he lens moves DOWN → UP)



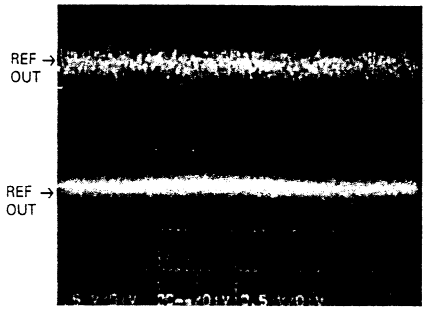
I1: TEY 0.5V/div. 5ms/div.
I2: TIN 0.5V/div.
rmal mode: Track search (32 track jump)



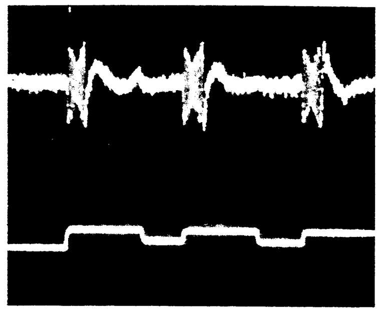
I1: FIN 0.5V/div. 0.5s/div.
I2: SIN 1V/div.
rmal mode: Focus search (8cm disc)



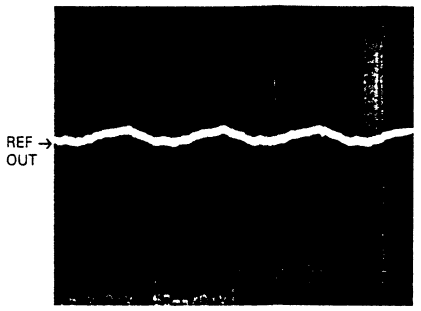
⑧ CH1: TEY 0.5V/div. 20ms/div.
⑨ CH2: TIN 0.5V/div.
Normal mode: Play



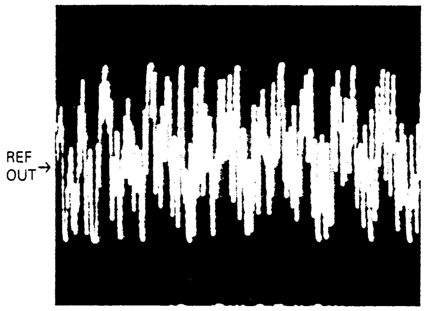
⑧ CH1: TEY 1V/div. 5ms/div.
㉓ CH2: CIN
Normal mode: Search



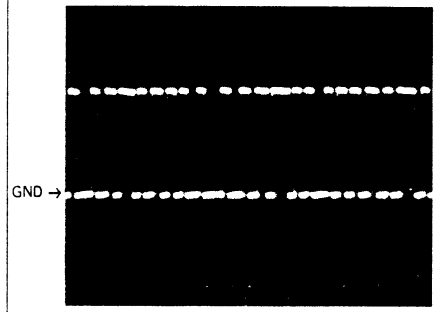
⑩ SIN 0.5V/div. 50ms/div.
Normal mode: Play (12cm disc)



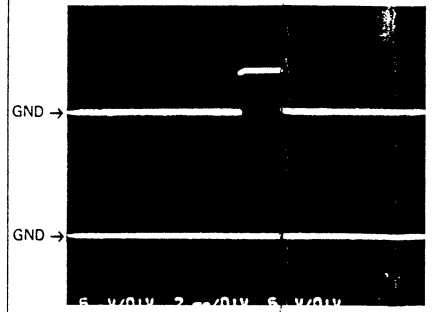
⑩ SIN 0.5V/div. 10ms/div.
Search (12cm disc)



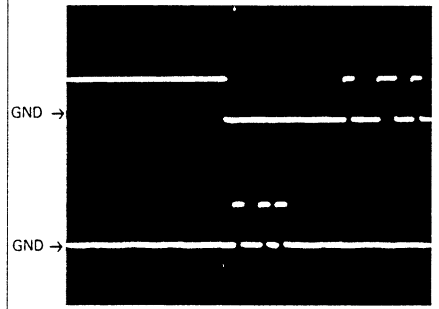
⑪ EFM 2V/div. 5μs/div.
Play



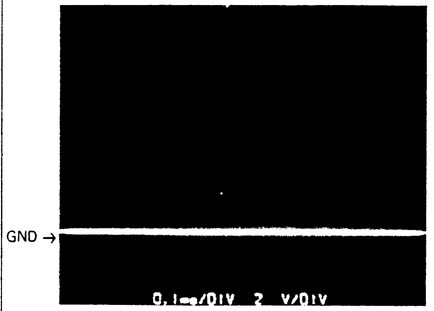
⑫ CH1: MDF 5V/div. 2ms/div.
⑬ CH2: MDR 5V/div.
Play



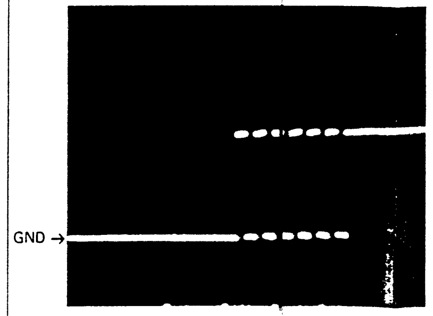
⑫ CH1: MDF 5V/div. 10ms/div.
⑬ CH2: MDR 5V/div.
Search



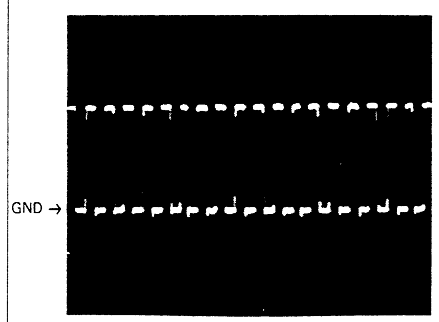
⑭ FLAG 2V/div. 0.1ms/div.
Play



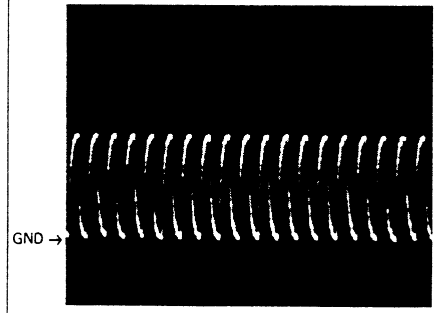
⑭ FLAG 2V/div. 0.1ms/div.
Search



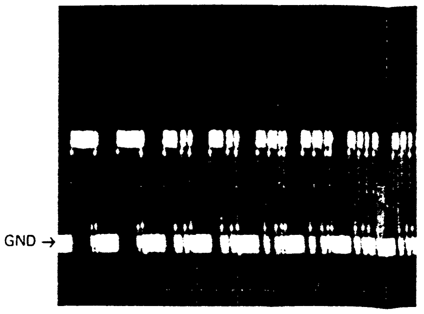
⑮ PLCK 2V/div. 0.5μs/div.
Play



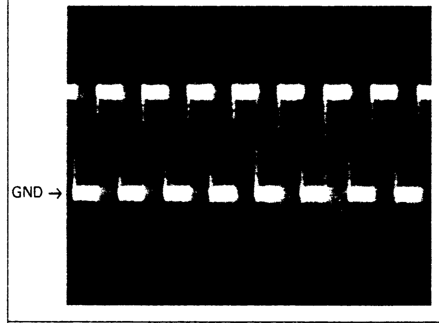
⑯ SCKO 2V/div. 1μs/div.
Play



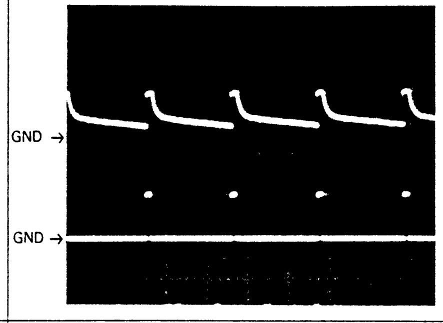
⑰ Dout 2v/div. 10μs/div.
Play



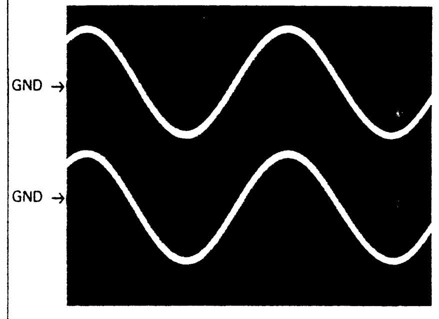
⑱ LRCK 2V/div. 20μs/div.
Play



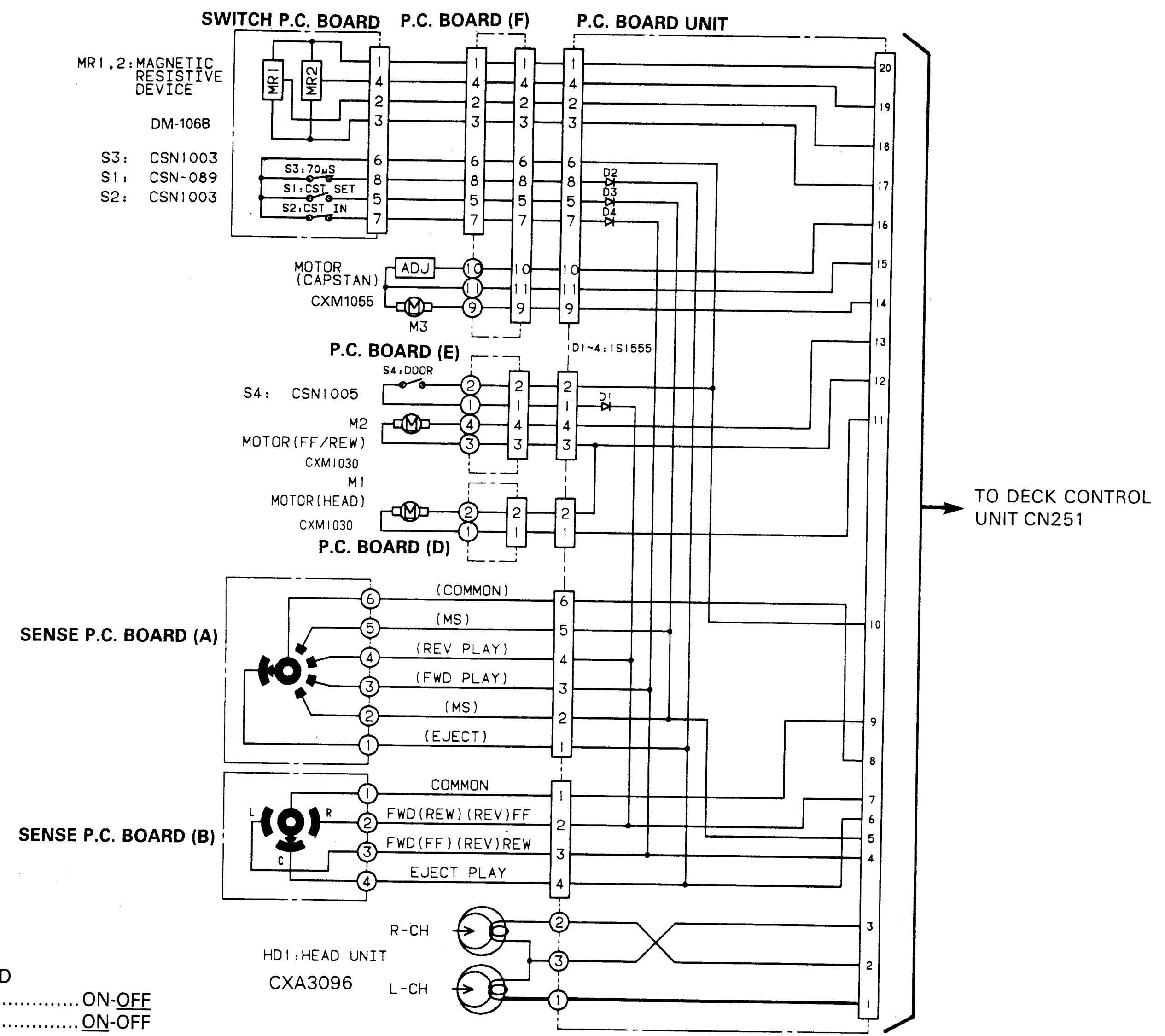
⑲ CH1: VM 5V/div. 50ms/div.
⑳ CH2: VMC 5V/div.
Normal mode: No disc



㉑ CH1: Lout 1V/div. 0.2ms/div.
㉒ CH2: Rout 1V/div.
Play (1kHz)



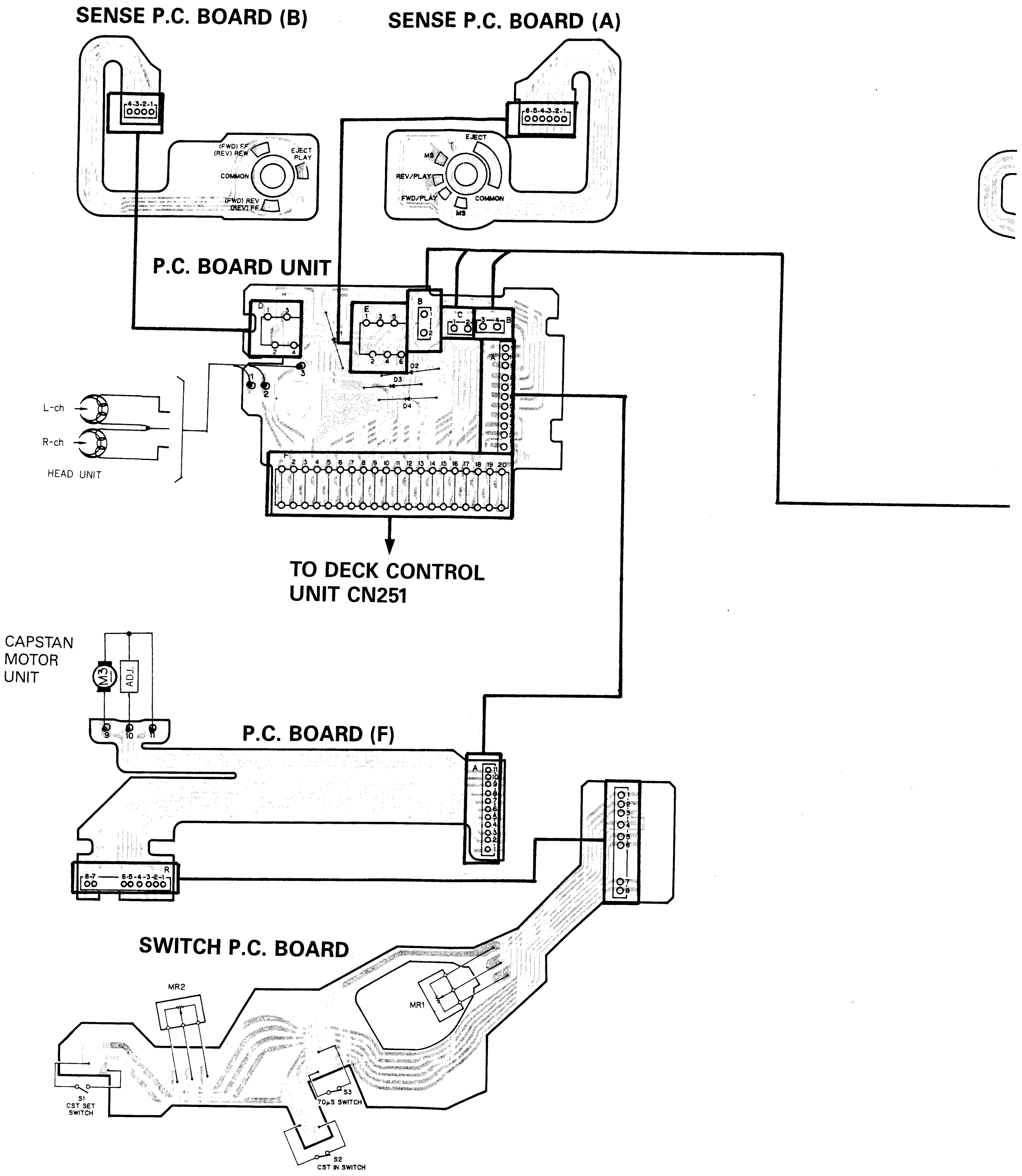
21. 6 CASSTTE MECHANISM ASSY


SWITCH P.C. BOARD
P.C. BOARD (F)
P.C. BOARD UNIT
MR1,2: MAGNETIC RESISTIVE DEVICE
DM-106B
S3: CSN1003
S1: CSN-089
S2: CSN1003
S3: 70µS
S1: CST SET
S2: CST IN
MR1
MR2
MOTOR (CAPSTAN)
CXM1055
ADJ
M3
D2
D3
D4
D1~4: 1S1555
P.C. BOARD (E)
S4: DOOR
S4: CSN1005
M2
MOTOR (FF/REW)
CXM1030
M1
MOTOR (HEAD)
CXM1030
P.C. BOARD (D)
D1
SENSE P.C. BOARD (A)
(COMMON)
(MS)
(REV PLAY)
(FWD PLAY)
(MS)
(EJECT)
SENSE P.C. BOARD (B)
COMMON
FWD (REW) (REV) FF
FWD (FF) (REV) REW
EJECT PLAY
R-CH
HD1: HEAD UNIT
CXA3096
L-CH
TO DECK CONTROL UNIT CN251

SWITCH
SWITCH P.C. BOARD
S1: CST SET .... ON-OFF
S2: CST IN .... ON-OFF
S3: 70µS SWITCH .... ON-OFF
MISCELLANEOUS
S4: DOOR SWITCH .... ON-OFF
The underlined indicates the switch position.

TEST TAPE:
315 Hz, 0 dB (160 nwb/m)

Fig. 72


SENSE P.C. BOARD (B)
SENSE P.C. BOARD (A)
(FWD) FF (REV) REW
EJECT PLAY
COMMON
(FWD) REV (REV) FF
EJECT
MS
REV/PLAY
FWD/PLAY
COMMON
P.C. BOARD UNIT
L-ch
R-ch
HEAD UNIT
TO DECK CONTROL UNIT CN251
CAPSTAN MOTOR UNIT
M3
ADJ.
P.C. BOARD (F)
SWITCH P.C. BOARD
MR2
MR1
S1 CST SET SWITCH
S3 70µS SWITCH
S2 CST IN SWITCH

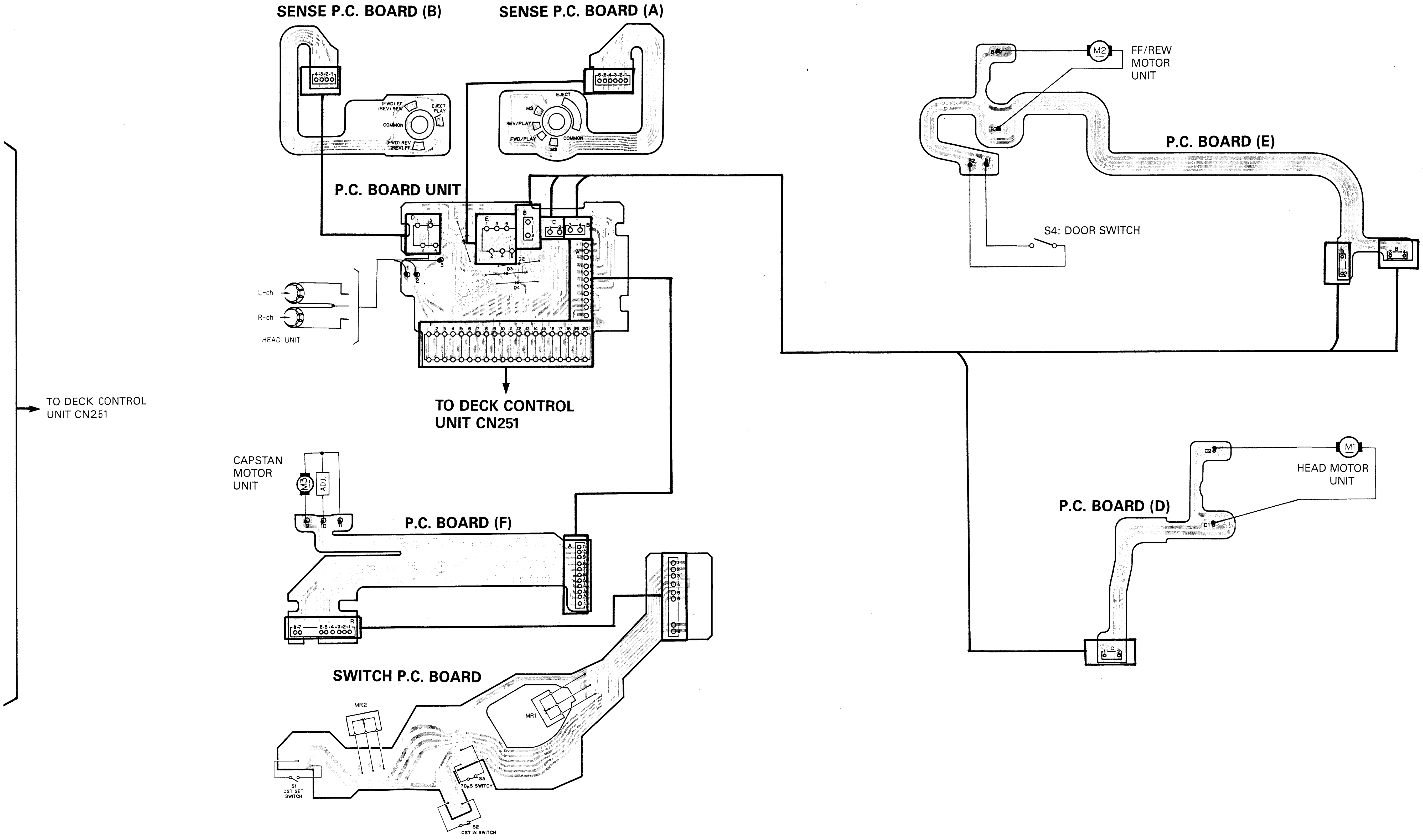

SENSE P.C. BOARD (B)
SENSE P.C. BOARD (A)
(FWD) FF
(REV) REW
EJECT
PLAY
COMMON
(FWD) REV
(REV) FF
EJECT
M3
REV/PLAY
FWD/PLAY
COMMON
M9
P.C. BOARD UNIT
D1
D2
D3
D4
L-ch
R-ch
HEAD UNIT
TO DECK CONTROL UNIT CN251
TO DECK CONTROL UNIT CN251
CAPSTAN MOTOR UNIT
M3
ADJ
P.C. BOARD (F)
SWITCH P.C. BOARD
MR2
MR1
S1 CST SET SWITCH
S3 70μS SWITCH
S2 CST IN SWITCH
FF/REW MOTOR UNIT
M2
B3
B2
B1
P.C. BOARD (E)
S4: DOOR SWITCH
HEAD MOTOR UNIT
M1
C2
C1
P.C. BOARD (D)

Fig. 73

22. CHASSIS EXPLODED VIEW (1)

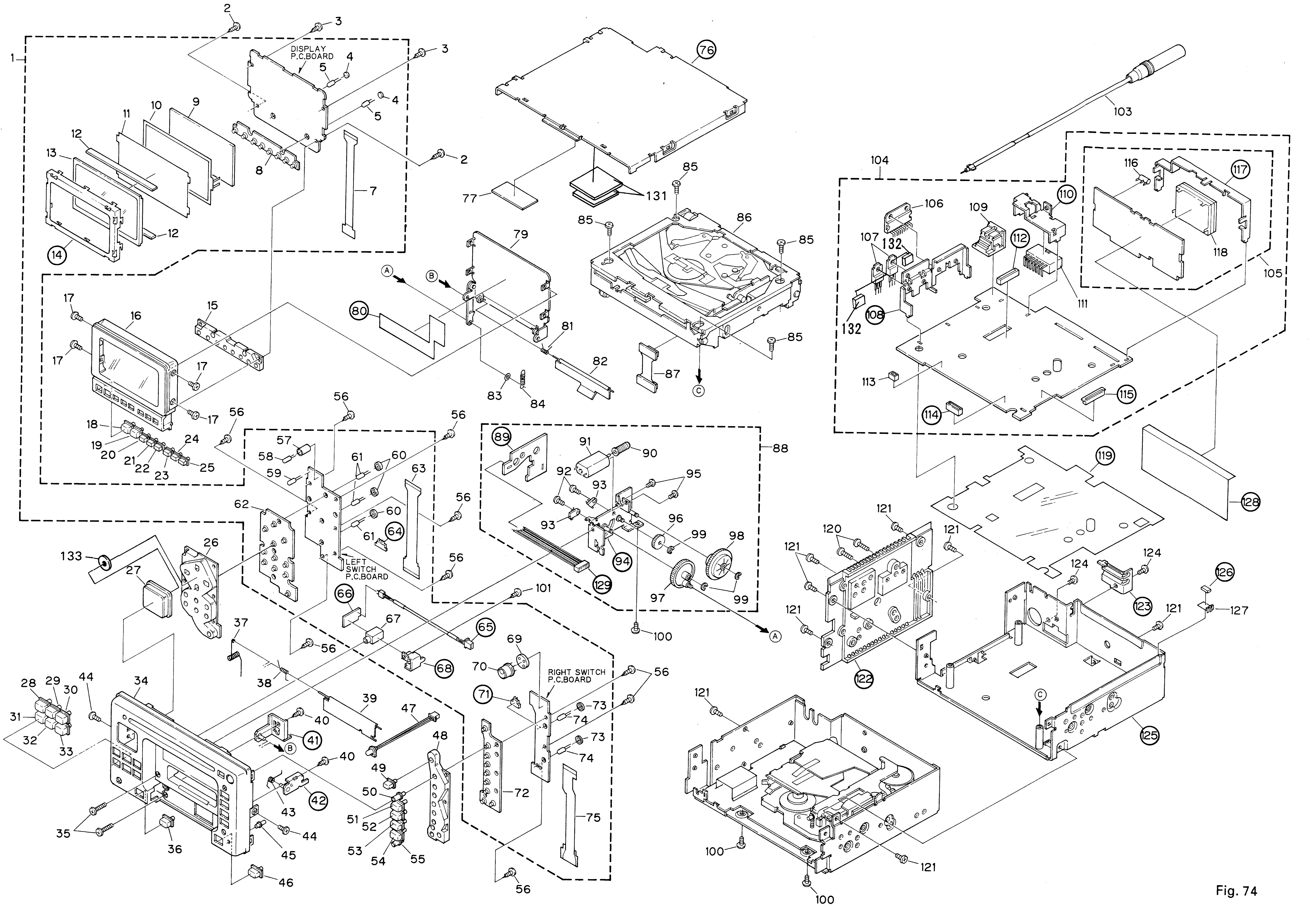

DISPLAY P.C.BOARD
LEFT SWITCH P.C.BOARD
RIGHT SWITCH P.C.BOARD
1
2
3
4
5
7
8
9
10
11
12
13
⑭
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
㊶
㊷
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
(64)
(65)
(66)
67
(68)
69
70
(71)
72
73
74
75
(76)
77
79
(80)
81
82
83
84
85
86
87
88
(89)
90
91
92
93
(94)
95
96
97
98
99
100
101
103
104
105
106
107
(108)
109
(110)
111
(112)
113
(114)
(115)
116
(117)
118
(119)
120
121
(122)
(123)
124
(125)
(126)
127
(128)
(129)
131
132
133
Ⓐ
Ⓑ
Ⓒ

Fig. 74

● Parts List

NOTE:

- *The parts m*
  subject to re
- *Because the*
  not spare pa

Mark No.

◉ 1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35

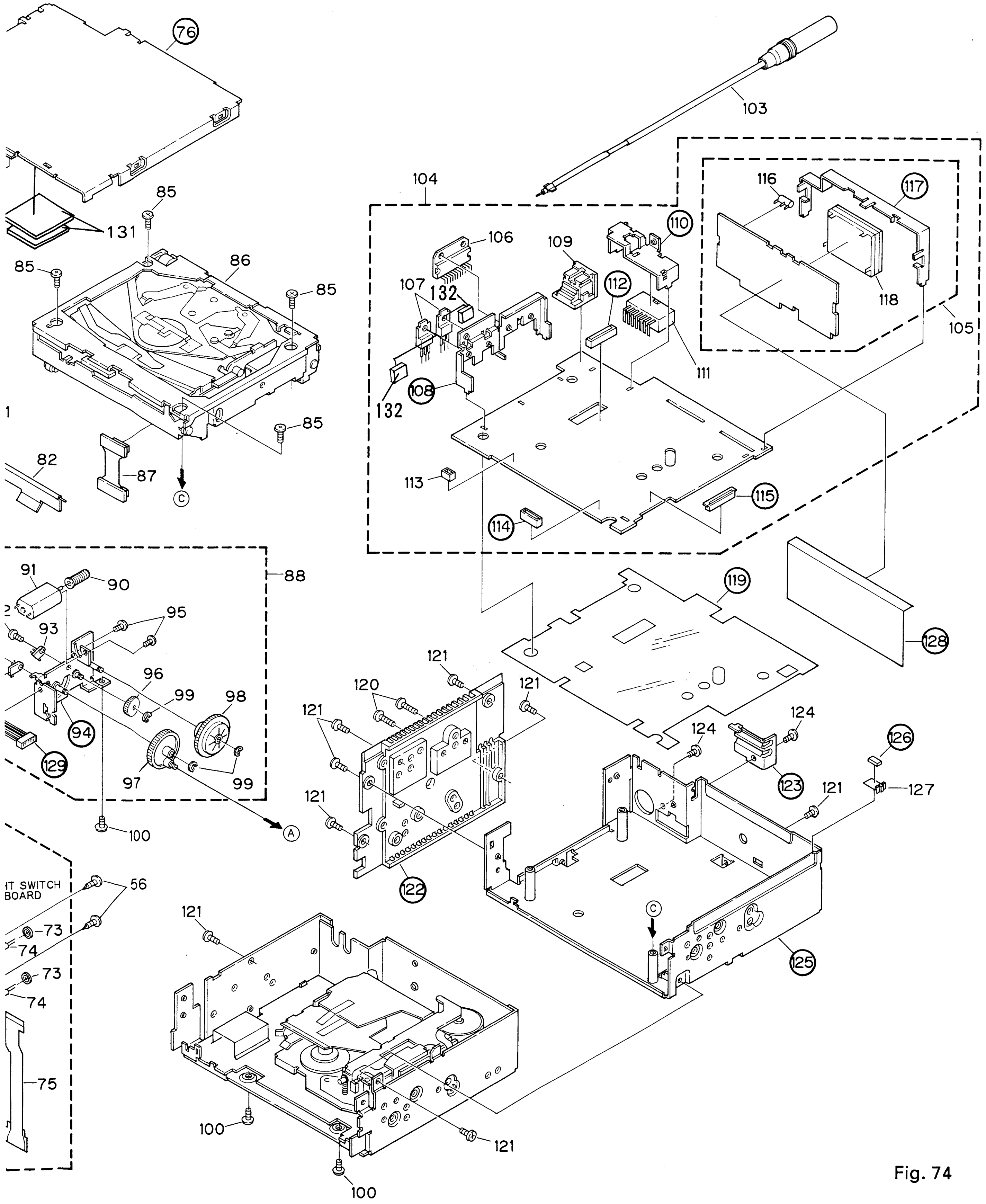

76
103
85
131
104
116
117
106
109
110
86
85
85
107
132
112
118
105
111
132
108
85
82
87
113
115
114
C
91
90
88
95
93
96
99
98
94
129
97
99
100
A
119
128
121
120
121
121
124
124
126
123
121
127
121
122
125
C
IT SWITCH
BOARD
56
73
74
73
74
75
121
100
121
100

Fig. 74

• Parts List (FH-M75/UC)

NOTE:

- *The parts marked with "◉" may need long time to supply and their supply is subject to refuse as the case may be.*
- *Because the parts with encircled number shown on the dismantling drawing are not spare parts, we are unable to supply them in principle.*

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
◉	1	Key Board Unit	CWM3008		36	Button(DIRECTION)	CAC2408
	2	Screw	BPZ20P080FMC		37	Spring	CBH1355
	3	Screw	BPZ20P050FMC		38	Spring	CBH1350
	4	Bush	CNV-724		39	Door	CAT1439
	5	Lamp(IL951,952)	CEL1150		40	Screw	BPZ20P050FZK
	6	·····			41	Bracket	CNC3933
	7	P.C.Board	CNP2789		42	Bracket	CNC3934
	8	Rubber	CNV2917		43	Spring	CBH1330
	9	Spacer	CNM2674		44	Screw(M2.6×4)	CBA1156
	10	EL	CEL1146		45	Button(ﾘｾｯﾄ)	CAC2360
	11	Plate	CNM3326		46	Button(TAPE EJECT)	CAC2409
	12	Connector	CNV2417		47	Lamp(IL959)	CEL1257
	13	LCD	CAW1138		48	Lens	CNV2947
	14	Holder	CNC4041		49	Button(CD EJECT)	CAC2399
	15	Lens	CNV2949		50	Button(A)	CAC3082
	16	Grille Unit	CXA4598		51	Button(F1)	CAC2411
	17	Screw(M2×3)	CBA1154		52	Button(F2)	CAC2412
	18	Button(DISP)	CAC2415		53	Button(F3)	CAC2413
	19	Button(○)	CAC2416		54	Button(F4)	CAC2414
	20	Button(1)	CAC3075		55	Button(S)	CAC3081
	21	Button(2)	CAC3076		56	Screw	BPZ20P080FMC
	22	Button(3)	CAC3077		57	Holder	CNV2509
	23	Button(4)	CAC3078		58	LED(D954)	BG3433S
	24	Button(5)	CAC3079		59	Lamp(IL955)	CEL1150
	25	Button(6)	CAC3080		60	Bush	CNV-724
	26	Lens	CNV2973		61	Lamp(IL956,957,958)	CEL1150
	27	Button Assy(VOL)	CAC3098		62	Rubber	CNV2919
	28	Button(CD)	CAC3069		63	P.C.Board	CNP2788
	29	Button(TAPE)	CAC3070		64	Connector(5P)(CN701)	CKS2194
	30	Button(TUNER)	CAC3071		65	·····	
	31	Button(TR.IN)	CAC3154		66	P.C.Board	CNP2882
	32	Button(ENT)	CAC3073		67	·····	
	33	Button(E/F)	CAC3074		68	·····	
	34	Grille Unit	CXA4597		69	Spacer	CNM2734
	35	Screw(M2×10)	CBA1153		70	IC(IC953)	BX-1393

Mark	No.	Description	Part No.
	71	Connector(2P)(CN704)	CKS2191
	72	Rubber	CNV2918
	73	Bush	CNV-724
	74	Lamp(IL953,954)	CEL1150
	75	P.C.Board	CNP2790
	76	Case	CNB1596
	77	Spacer	CNM3134
	78	·····	
	79	Holder Unit	CXA4599
	80	Insulator	CNM3360
	81	Spring	CBH1349
	82	Door	CAT1445
	83	Washer	CBF1050
	84	Spring	CBH1338
	85	Screw	BMZ26P040FMC
◉	86	CD Mechanism Module	CXK2510
	87	Connector Unit	CXA4720
	88	Drive Assy	CXA4627
	89	P.C.Board	CNP2380
	90	Gear	CNV2389
	91	Motor(M601)	CXM1024
	92	Screw	BMZ20P050FMC
	93	Switch(S601,602)	CSN1012
	94	Holder Unit	CXA3299
	95	Screw	PMZ20P030FMC
	96	Gear	CNV2458
	97	Gear Unit	CXA3409
	98	Gear Unit	CXA3406
	99	Washer	YE20FUC
	100	Screw	BMZ30P050FMC
	101	·····	
	102	·····	
	103	Antenna Cable	CDH1104
◉	104	Amp Unit	CWM2896
	105	FM/AM Unit	CWE1240
	106	IC(IC551)	PA3027A
	107	Transistor(Q901,909)	2SD1944
	108	Bracket	CNC3925
	109	Connector(13P)(CN902)	CKS2105
	110	Bracket	CNC3926
	111	Connector(14P)(CN901)	CKM1091
	112	Connector(20P)(CN903)	CKS2250
	113	·····	
	114	Connector(18P)(CN722)	CKS2301
	115	Connector(22P)(CN721)	CKS2252
	116	Antenna Jack	CKX1010
	117	Holder	CNC3506
	118	FM Front End	CWB1063
	119	Insulator	CNM3174
	120	Screw	BMZ30P120FMC
	121	Screw	BMZ30P050FMC
	122	Heat Sink	CNR1226
	123	Bracket	CNC4031
	124	Screw	BMZ30P050FMC
	125	Chassis	CNA1428
	126	Cushion	CNM3252
	127	Spring	CBL1141
	128	Insulator	CNM3245
	129	Connector(5P)	CDE3550
	130	·····	
	131	Spacer	CNM3417
	132	Spacer	CNM3405
	133	Spacer	CNM3399

- The FH-M70/ES Parts List enumerates the parts which differ from those for the FH-M75/UC only. The parts other than those enumerated in the FH-M70/ES Parts List are indentical with those in the FH-M75/UC Parts List, to which you are requested to refer, accordingly. The FH-M75/UC Parts List is given on page 156.

			FH-M75/UC	FH-M70/ES
Mark	No.	Description	Part No.	Part No.
◉	1	Key Board Unit	CWM3008	CWM2894
	16	Grille Unit	CXA4598	CXA4602
	34	Grille Unit	CXA4597	CXA4601
	65	Connector	·····	CDE3444
	67	Jack	·····	CKS2179
	68	Bracket	·····	CNC3929
	79	Holder Unit	CXA4599	CXA4364
	82	Door	CAT1445	CAT1286
	101	Screw	·····	BPZ20P050FMC
◉	104	Amp Unit	CWM2896	CWM2898
	113	Plug	·····	CKS1035

23. CHASSIS EXPLODED VIEW (2)

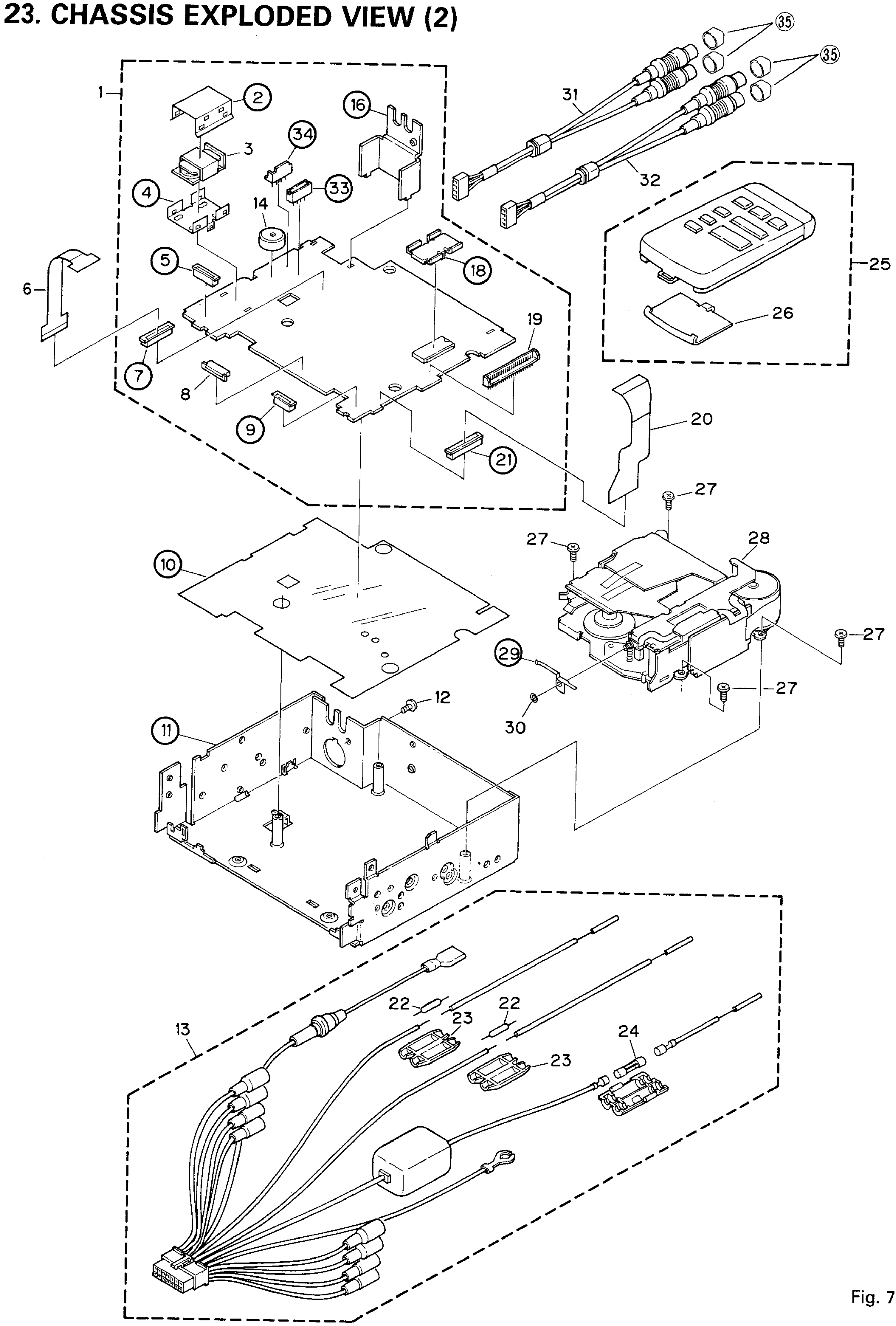


Fig. 75

• Parts List (FH-M75/UC)

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
◉	1	Deck Control Unit	CWM2895		21	Connector(22P)(CN708)	CKS2252
	2	Shield Case	CNC3398		22	Resistor	RS1/2P102JL
	3	Inverter(INV701)	CTX1029		23	Cap	CNS1472
	4	Shield Plate	CNC3377		24	Fuse	CEK1023
	5	Connector(15P)(CN702)	CKS2245		25	Rimote Control Assy	CXA4747
	6	P.C.Board	CNP2791		26	Battery Cover	CNS2224
	7	Connector(20P)(CN707)	CKS2250		27	Screw	BMZ26P040FMC
	8	Connector(13P)(CN705)	CKS1951	◉	28	Cassette Mechanism Assy	CXK1647
	9	Connector(12P)(CN706)	CKS2242				
	10	Insulator	CNM3173		29	Arm	CNC1280
	11	Chassis	CNA1400		30	Washer	CBF-046
	12	Screw	BMZ30P050FMC		31	Connector(REAR)	CDE3604
	13	Cord Assy	CDE3679		32	Connector(FRONT)	CDE3605
	14	Buzzer(BZ701)	CPV1011		33	Plug(4P)(CN801)	CKS-568
	15	·····			34	Plug(4P)(CN803)	CKS1224
	16	Bracket	CNC3974		35	Cap	CNV2680
	17	·····					
	18	Heat Sink	CNG-368				
	19	Plug(20P)(CN251)	CKS-659				
	20	P.C.Board	CNP2792				

- The FH-M70/ES Parts List enumerates the parts which differ from those for the FH-M75/UC only. The parts other than those enumerated in the FH-M70/ES Parts List are indentical with those in the FH-M75/UC Parts List, to which you are requested to refer, accordingly. The FH-M75/UC Parts List is given on page 160.

			FH-M75/UC	FH-M70/ES
Mark	No.	Description	Part No.	Part No.
◉	1	Deck Control Unit	CWM2895	CWM2897
	25	Rimote Control Assy	CXA4747	CXA3730
	26	Battery Cover	CNS2224	CNS1962

24. CD MECHANISM MODULE EXPLODED VIEW

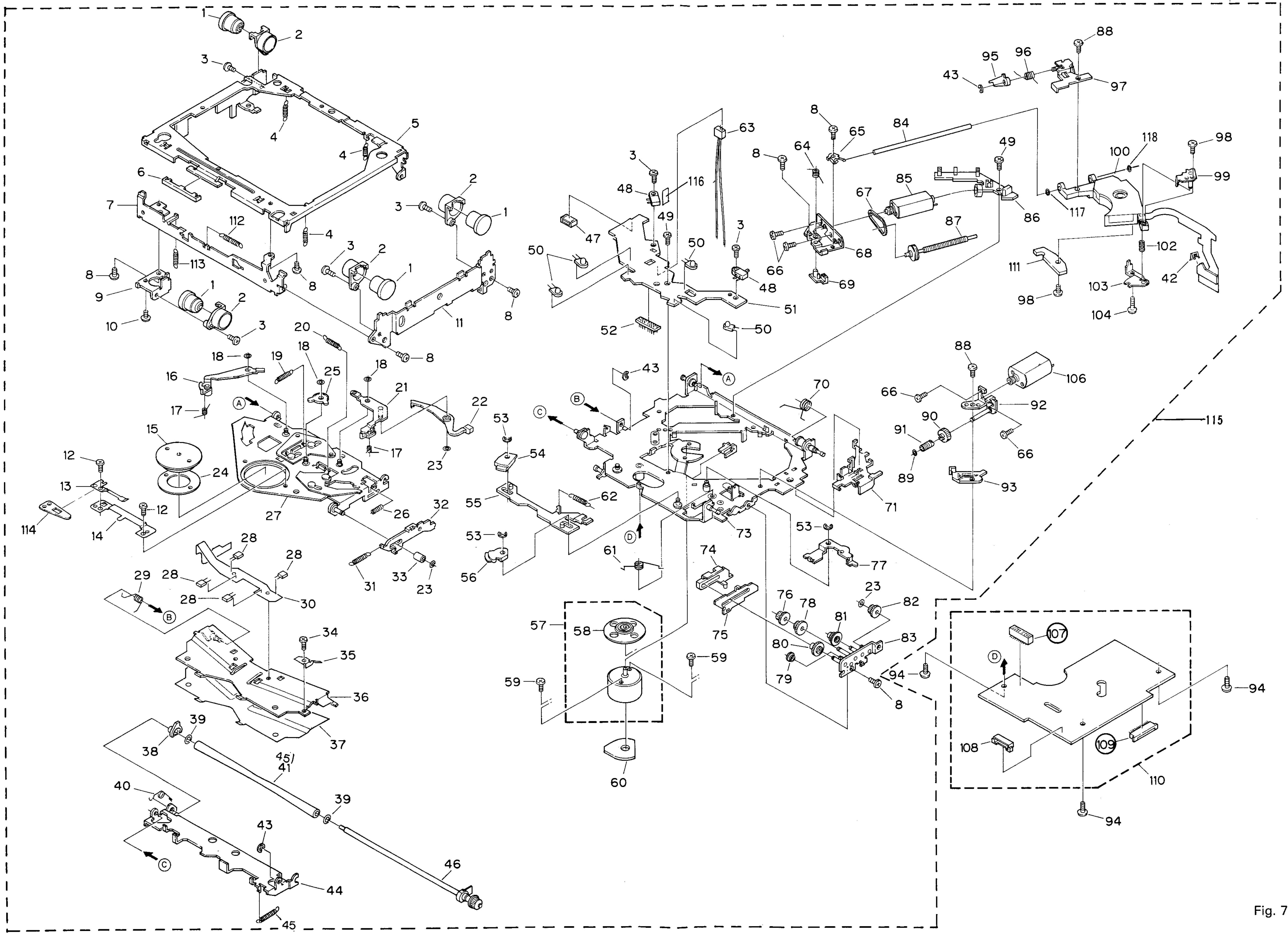

1
2
3
4
5
4
6
7
112
4
113
8
9
1
2
10
3
3
2
1
2
3
1
8
11
8
8
20
18
19
18
25
16
17
A
18
21
22
17
23
15
24
12
13
12
114
14
27
26
32
33
23
31
28
28
28
28
29
30
B
34
35
36
37
38
39
41
39
40
43
C
44
45
46
63
3
116
48
49
47
50
50
3
48
51
52
50
43
A
B
C
53
54
55
62
53
56
D
61
73
57
58
59
59
60
74
75
76
78
81
80
79
82
23
83
8
94
53
77
70
71
8
65
64
84
8
66
67
85
68
69
49
86
87
88
95
96
43
97
118
98
100
99
117
102
111
103
42
98
104
88
106
66
92
91
90
66
89
93
115
107
D
94
108
109
110
94

Fig. 76

- **Parts List**

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Damper	CNV2882		41	Roller	CNV2225
	2	Holder	CNV2863		42	Short Pin	CBL1010
	3	Screw	CBA1004		43	Washer	YE15FUC
	4	Spring	CBH1417		44	Arm	CNC3819
	5	Frame	CNC3816		45	Spring	CBH1421
	6	Guide	CNV2891		46	Gear Unit	CXA4265
	7	Frame	CNC3835		47	Connector (4P)	CKS2088
	8	Screw	BMZ20P030FMC		48	Switch (S1, 2)	CSN1012
	9	Bracket	CNC3818		49	Screw	CBA1077
	10	Screw	BMZ20P040FNI		50	LED (D1-4)	BR4361F
	11	Frame	CNC3817		51	Gathering P. C. Board	CNX1759
	12	Screw	JFZ20P018FNI		52	Connector (16P)	CKS2064
	13	Spring	CBL1131		53	Washer	YE20FUC
	14	Bracket	CNC3830		54	Arm	CNV2884
	15	Clamper	CNV2864		55	Lever Unit	CXA4269
	16	Arm Unit	CXA4271		56	Arm	CNV2885
	17	Spring	CBH1415		57	Motor (Spindle)	CXM1058
	18	Washer	CBF1039		58	Support Wheel	CNV2859
	19	Spring	CBH1418		59	Screw	HBA-258
	20	Spring	CBH1419		60	P. C. Board	CNP2720
	21	Arm Unit	CXA4272		61	Spring	CBH1414
	22	Arm	CNV2876		62	Spring	CBH1424
	23	Washer	CBF1038		63	Connector (2P)	CDE3369
	24	Sheet	CNM3110		64	Spring	CBH1410
	25	Gear	CNV2875		65	Spring	CBL1129
	26	Spring	CBH1423		66	Screw	JFZ20P025FMC
	27	Arm Unit	CXA4259		67	Belt	CNT1047
	28	Photo-transistor	PT4800		68	Bracket	CNC3832
	29	Spring	CBH1449		69	Holder	CNV2878
	30	P. C. Board	CNP2718		70	Spring	CBH1413
	31	Spring	CBH1420		71	Cover	CNV2889
	32	Lever	CNC3828		72	Holder	CNV3023
	33	Roller	CLA1936		73	Chassis Unit	CXA4258
	34	Screw	JFZ20P018FNI		74	Lever	CNV2874
	35	Spring	CBL1130		75	Lever	CNC3824
	36	Arm Unit	CXA4263		76	Gear	CNV2871
	37	Sheet	CNM3111		77	Arm	CNC3833
	38	Holder	CNV2866		78	Gear	CNV2872
	39	Washer	HBF-132		79	Gear	CNV2883
	40	Spring	CBH1412		80	Gear	CNV2873

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	81	Gear	CNV2870		101	·····	
	82	Gear	CNV2869		102	Spring	CBH1422
	83	Bracket Unit	CXA4261		103	Holder	CNC4306
	84	Shaft	CLA2027		104	Screw	JGZ20P070FNI
	85	Motor Unit (Carriage)	CXA4649		105	·····	
	86	Holder	CNV2888		106	Motor Unit (Loading)	CXA4267
	87	Screw Unit	CXA4266		107	Connector (CN352)	CKS2063
	88	Screw	CBA1082		108	Connector (CN752)	CKS2149
	89	Washer	CBF1054		109	Connector (CN351)	CKS2121
	90	Gear	CNV2892		110	Control Unit	CWX1454
	91	Gear	CNV2868		111	Weight	CNC4116
	92	Bracket Unit	CXA4262		112	Spring	CBH1458
	93	Holder	CNV2887		113	Spring	CBH1457
	94	Screw	PMSZ6P040FMC		114	Spacer	CNM3315
	95	Rack	CNV2879	◉	115	CD Mechanism Unit	CXA4260
	96	Spring	CBH1411		116	Cushion	CNT1057
	97	Bracket Unit	CXA4264		117	Washer	CBF1055
	98	Screw	JFZ17P030FNI		118	Cushion	CNT1058
	99	Holder Unit	CXA4606				
	100	PU Unit	CGY1020				

25. CASSETTE MECHANISM ASSY EXPLODED VIEW

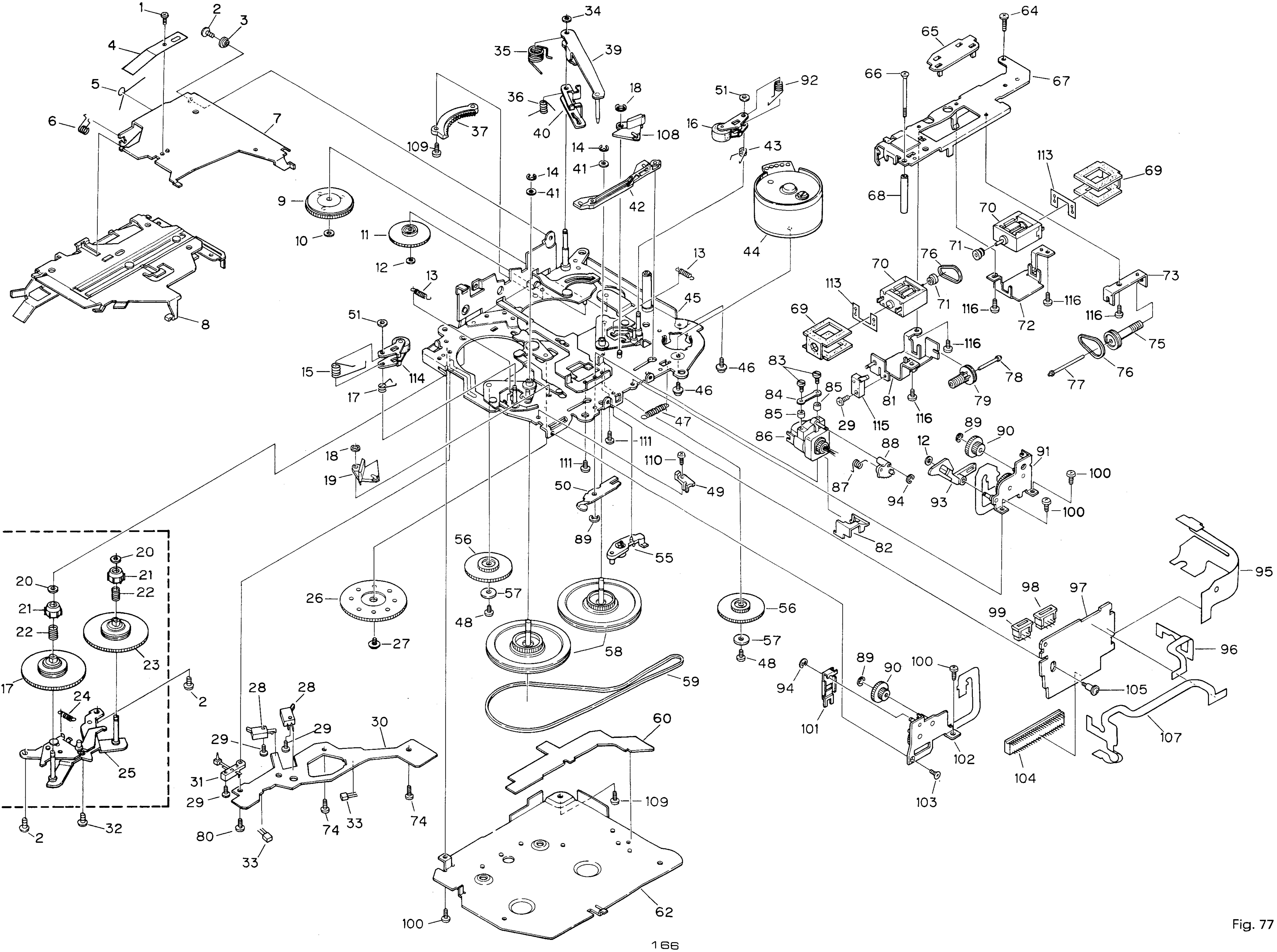

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
39
40
41
42
43
44
45
46
47
48
49
50
51
55
56
57
58
59
60
61
62
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
107
108
109
110
111
113
114
115
116
117

Fig. 77

●Parts List

Mark	No.	Description	Part No.
	1	Screw(M1.4×1.4)	HBA-147
	2	Screw	BMZ20P040FMC
	3	Bush	CLB-663
	4	Spring	CBE1023
	5	Spring	CBH-867
	6	Spring	CBH-837
	7	Arm	CNC2373
	8	Holder Unit	CXA4525
	9	Gear Unit	CXA2088
	10	Washer	CBF1026
	11	Gear	CNY-271
	12	Washer	CBF-126
	13	Spring	CBH-835
	14	E Type Washer	CBG1003
	15	Spring	CBH1277
	16	Pinch Roller Unit	CXA2608
	17	Spring	CBH1197
	18	E Type Washer	YE25FUC
	19	Arm	CNV1254
	20	Washer	CBF1022
	21	Collar	CNW-932
	22	Spring	CBH-827
	23	Reel Unit	CXA4023
	24	Spring	CBH-868
	25	Bracket Unit	CXA1481
	26	Gear	CNW-944
	27	Screw(M2×4)	CBA1106
	28	Switch(70μS,CST IN)	CSN1003
	29	Screw(M1.7×5.5)	CBA1025
	30	P.C.Board	CNP1223
	31	Switch(CST SET)	CSN-089
	32	Screw(M1.7×3)	CBA-186
	33	Magnetic Resistive Device	DM-106B
	34	Washer	CBF-088
	35	Spring	CBH-836
	36	Spring	CBH-886
	37	Gear	CNV1075
	38	Screw(M2×5)	CBA1054
	39	Arm Unit	CXD-389
	40	Arm	CNG-618
	41	Washer	HBF-179
	42	Lever	CNV1257
	43	Spring	CBH1196
	44	Motor(Capstan)	CXM1055
	45	Chassis Unit	CXA2808
	46	Screw	PMS26P025FMC
	47	Spring	CBH-830
	48	Screw(M2×2.5)	HBA-175
	49	Spacer	CNW-945
	50	Spring	CBL1050
	51	Washer	CBF1025
	52	·····	
	53	·····	
	54	·····	
	55	Clamper	CNV1079
	56	Gear	CNV1616
	57	Collar	CLA1238
	58	Flywheel	CNR1572
	59	Belt	CNT1046
	60	Insulator	CNM2592
	61	Reel Assy	CXA4025
	62	Cover	CNG-625
	63	Screw	BMZ20P030FMC
	64	Screw(M1.7×6)	CBA1123
	65	Holder	CNV1252
	66	Screw(M2×25)	CBA-165
	67	Guide	CXA2380
	68	Spacer	CNC1651
	69	Insulator	CNM1318
	70	Motor (FF/REW,Head Position)	CXA1030
	71	Pulley	CLA1122
	72	Bracket	CNC1339
	73	Bracket	CNC1548
	74	Screw(M2×2.5)	CBA1037
	75	Pulley	CNV1255
	76	Belt	CNT1047
	77	Shaft	CLA1120
	78	Shaft	CLA1119
	79	Pulley	CNV1256
	80	Screw(M2×5)	CBA1054
	81	Bracket Unit	CXA1381
	82	Cover	CNV1489
	83	Screw(M1.4×8)	CBA1169
	84	Spring	CBE-114
	85	Azimuth Rubber	CNY-134
	86	Head Unit	CXA3096
	87	Spring	CBH-829
	88	Gear	CNW-939
	89	E Type Washer	YE12FUC
	90	Gear	CNV1262
	91	Holder Assy	CXA1546
	92	Spring	CBH1276
	93	Arm	CNV1495
	94	E Type Washer	YE15FUC
	95	P.C.Board	CNP1227
	96	P.C.Board	CNP1340
	97	P.C.Board	CNP2747
	98	Connector(6P)	CKS1075
	99	Connector(4P)	CKS1073
	100	Screw	BMZ20P025FMC
	101	Arm	CNH-004
	102	Holder Assy	CXA1548
	103	Screw(M2×2)	HBA-209
	104	Connector(20P)	CKS-678
	105	Screw(M2×2×3)	CBA1022
	106	·····	
	107	P.C.Board	CNP1247
	108	Arm	CNV1253
	109	Screw(M2×6)	CBA1004
	110	Screw(M2×4)	CBA1015
	111	Screw(M2×2.5)	CBA1041
	112	·····	
	113	Sheet	CNM1856
	114	Pinch Roller Unit	CXA2609
	115	Switch	CSN1005
	116	Screw(M2×2.2)	HBA-174
	117	Reel Unit	CXA4024

26. PACKING METHOD

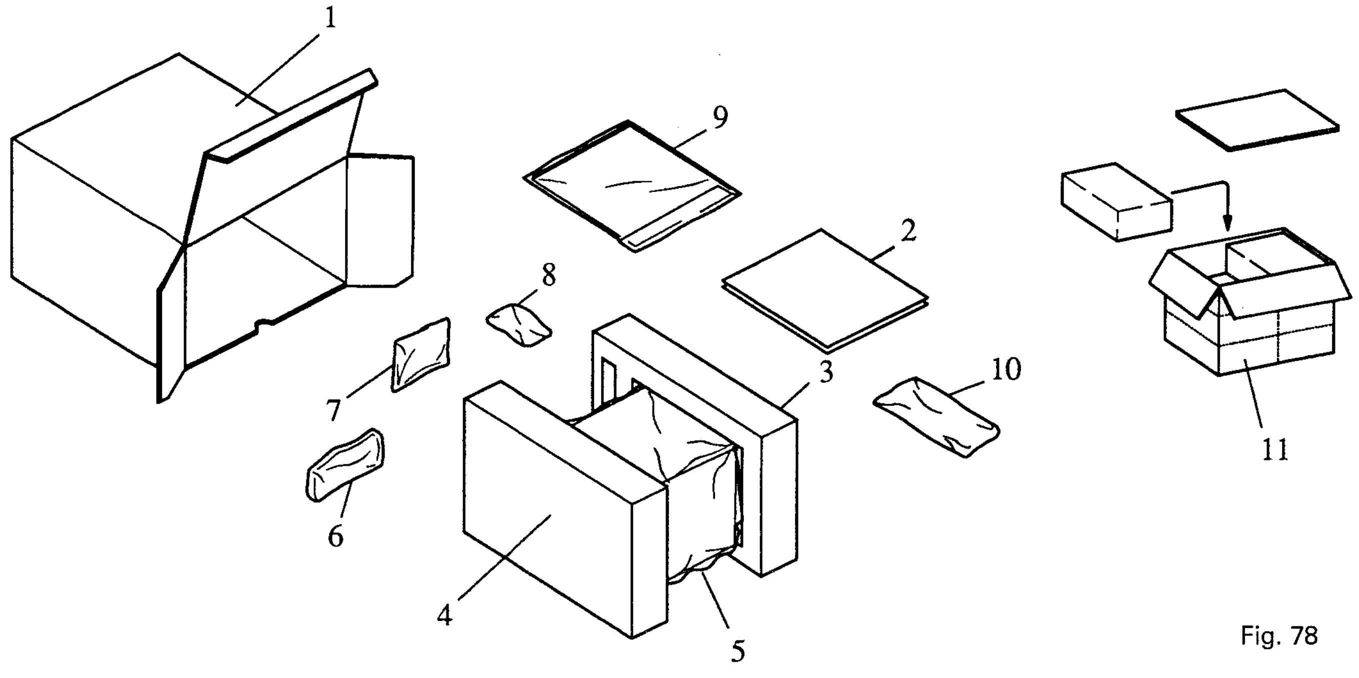


Fig. 78

●Parts List

∗:Non spare part

Mark	No.	Description	Part No.
	1	Carton(UC)	CHG2184
		Carton(ES)	CHG2185
	2-1	Owner's Manual(UC) (English,French)	CRD1579
		Owner's Manual(ES) (English)	CRB1239
*	2-2	Card(UC)	ARY1048
	3	Styrofoam	CHP1460
	4	Styrofoam	CHP1459
	5	Cover	CEG1074
	6	Rimote Control Assy(UC)	CXA4747
		Rimote Control Assy(ES)	CXA3730
	7	Accessory Assy	CEA1473
*	7-1	Polyethylene bag	CEG-127
*	7-2	Battery	CEX1006
	7-3	Fastener	CNM3249

Mark	No.	Description	Part No.
	7-4	Fastener	CNM3250
	8	Screw Assy	CEA1517
	8-1	Screw(X8)	BMZ50P080FMC
*	8-2	Polyethylene bag	CEG-127
	8-3	Screw(X6)	CMZ50P080FMC
	9	Panel Assy	CEA1531
*	9-1	Cushion(X2)	CNM2718
*	9-2	Cushion(X2)	CNM2719
*	9-3	Sheet	CNM2739
*	9-4	Panel	CNS2000
*	9-5	Spacer(X6)	CNV2668
*	9-6	Polyethylene bag	E36-637
	10	Cord Assy	CDE3679
	11	Contain Box(UC)	CHL2184
*		Contain Box(ES)	CHL2185

27. ELECTRICAL PARTS LIST

NOTE:

- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *The part numbers shown below indicate chip components.*

  Chip Resistor

  RS1/□S□□□J,RS1/□□S□□□J

  Chip Capacitor (except for CQS.....)
  CKS....., CCS....., CSZS.....

● FH-M75/UC

Unit Number :
Unit Name : Amp P.C.Board

MISCELLANEOUS

======Circuit Symbol & No.	Part Name======	Part No.
IC 401 409 414		RC2068MD1
IC 402 404 405 406 410 411 412		UPC4570G
IC 403 413		TC4066BF
IC 407	HIC	CWV1015
IC 501	(SC17010GF-522)	GGF-927
IC 551		PA3027A
Q 401 402 403 404 556		DTC323TK
Q 405		DTC144TK
Q 406		DTC144EK
Q 409 521		DTC144TK
Q 410 917 920		DTC114EK
Q 417		DTA114EK
Q 418		DTA114EK
Q 501 504 515 516 903		DTC114EK
Q 502		2SC3098
Q 503 506 511 522 715		2SC2712
Q 505		2SC3295
Q 507 510		2SK208
Q 508 512		2SA1162
Q 509		2SA1298
Q 513 514		2SA1298
Q 517 518 906 916		2SA1162
Q 519 520		DTC323TK
Q 901 909		2SD1944
Q 902		DTA114EK
Q 904 912 918		2SB1243
Q 905		DTC144EK
Q 907 913 915		2SC2712
Q 908		DTC114EK
Q 910		DTA124EK
Q 911 919		DTC144EK
Q 921		2SC3113
D 403 908 915		1SS133
D 404		HZS4LLC
D 501 502		RD3R0ESB2
D 503 509 901		MA151WK-MT
D 505 506		MA151WK-MT
D 510 511		RD5R6JSB2
D 551 552 553 554 555 556 557 558 559 560		ERA15-02VH
D 722		RD7R5JSB3
D 903		HZS9C2L
D 904		1SS133
D 905		RD7R5JSB3
D 906		HZS9C3L
D 909 913 914 916		ERA15-02VH
D 910		RD8R2JSB3
L 501 502 503	Inductor	LAU2R2K
L 902	Coil	CTF1135
IB 501		CWW1301
IB 502		CWW1223

======Circuit Symbol & No.	Part Name======	Part No.
X 501	CrystalResonator	CSS1011
FU 901		ICP-N50
FU 902		ICP-N75
	FM/AM Unit	CWE1240

RESISTORS

======Circuit Symbol & No.	Part Name======	Part No.
R 401 402 457 458 485 486		RS1/10S822J
R 403 404 426 427 439 515 516 788		RS1/10S103J
R 405 406		RS1/10S433J
R 407 408 518 522 526 529		RS1/10S102J
R 409 410 514 927 928		RS1/10S223J
R 411 412		RS1/10S333J
R 413 414		RS1/10S153J
R 415 416 424 467 507 517 913 917 920		RS1/10S472J
R 417 418		RS1/10S683J
R 419 420 423 468 501 521 574 789		RS1/10S472J
R 421		RS1/10S563J
R 422		RS1/10S472J
R 425 428		RS1/10S203J
R 429 430 431 440 441 442 443 444		RS1/10S103J
R 432 433 434		RS1/10S753J
R 435 436 437 541 542 575 902		RS1/10S473J
R 445 446 530 787		RS1/10S473J
R 447 448 904 916		RS1/10S473J
R 449 795 796 797 798 799		RS1/10S471J
R 459 460 487 488		RS1/10S272J
R 461 491 492		RS1/10S223J
R 462		RS1/10S223J
R 465 466 519 538		RS1/10S152J
R 469 470 471 472 473 474 475 476 477 478		RS1/10S682J
R 479 480 481 482 483 484		RS1/10S682J
R 499 511 520 528 791 793 909		RS1/10S102J
R 502		RS1/10S331J
R 503 505		RS1/10S101J
R 504		RS1/10S182J
R 506		RS1/10S821J
R 508		RS1/10S102J
R 509 512 918		RS1/10S222J
R 510 545 546		RS1/10S222J
R 513 532 533 534 535		RS1/10S221J
R 523		RS1/10S154J
R 524		RS1/10S0R0J
R 525		RS1/10S104J
R 527		RS1/10S224J
R 531		RS1/10S104J
R 536		RS1/10S0R0J
R 539 540		RS1/10S471J
R 543 544		RS1/10S473J
R 547 548		RS1/10S122J
R 549 550		RS1/10S681J
R 551 552 555 556		RS1/10S562J

======Circuit Symbol & No.	Part Name======	Part No.
R 559 561		RS1/10S562J
R 560 562		RS1/10S562J
R 563 564 565 566 567 568 569 570		RS1/10S2R2J
R 571		RS1/10S472J
R 572		RS1/10S103J
R 573		RS1/10S152J
R 576		RS1/10S153J
R 786		RS1/10S473J
R 790 792 794 930 931		RS1/10S221J
R 901 912 914 922 924		RD1/4PS102JL
R 903		RD1/4PS103JL
R 905 925		RD1/4PS472JL
R 907 911 915		RS1/10S472J
R 908		RS1/10S103J
R 910		RS1/10S104J
R 919 921		RS1/10S103J
R 923		RS1/10S1R0J
R 926 929		RD1/4PS104JL
R 932 933		RS1/10S1R0J

CAPACITORS

Circuit Symbol & No.	Part Name	Part No.
C 401 402 417 418 421 422 427 428 431 432		CEA100M16LS2
C 403 404 419 429 430 534 535 536		CCSQCH220J50
C 405		CEA101M6R3LS
C 406 411 513 522 532 533 569 901 907		CKSQYF473Z50
C 407		CKSQYB273K50
C 408		CFTNA184J50
C 409		CKSQYB222K50
C 410		CKSYB681K50
C 420 537		CCSQCH220J50
C 423 424		CKSQYB332K50
C 425 426		CKSQYB331K50
C 435 437 438 439		CCSQCH220J50
C 501		CEA471M10L2
C 502		CKSQYB102K50
C 503 506		CCSQSL101J50
C 504 508 509 510 512 515		CKSQYB103K50
C 505		CKSQYB681K50
C 507 517		CKSQYB103K50
C 511 519		CKSQYB473K50
C 514	4.7 μF/16V	CCH1005
C 516		CFTNA474J50
C 518		CKSQYB473K50
C 520 521		CCSQCH100D50
C 523		CEA101M6R3LS
C 524		CKSQYB223K50
C 525		CKSQYB473K25
C 527 528		CCSQSL330J50
C 529 530 908		CEA4R7M35LS
C 531		CKSQYB331K50
C 539 540 542 571		CEA100M16LS2
C 541		CEA470M10LS
C 543 902		CEA010M50LS2
C 555 557		CKSQYB471K50
C 556 558		CKSQYB471K50
C 559 560 561 562 563 564 565 566		CQEA104J63
C 567 568		CKSYF104Z25
C 570 573	3300 μF/16V	CCH1037
C 572		CKSQYB472K50
C 574		CEA010M50LS2
C 575		CEA102M16L2
C 904		CEA101M10LS
C 905		CEA101M10L2
C 906		CEA101M16L2
C 909	2200 μF/16V	CCH-123
C 910		CEA220M16LS

======Circuit Symbol & No. Part Name====== Part No.

Unit Number : CWE1240
Unit Name : FM/AM Unit

MISCELLANEOUS

Circuit Symbol & No.	Part Name	Part No.
IC 51		PA4012B
IC 201		PA4018
Q 1 2		DTC124EU
Q 3 71 101		2SC4116
Q 121		IMZ1
Q 122		FMS1
Q 123		2SC4116
Q 201		FC12
Q 203 205		DTC124EU
Q 241		2SC2712
D 201 204		MA157-MR
D 205		SVC203CP
L 1	Inductor	LYS150K
L 2	Inductor	LPSQR22K
L 41	Inductor	CTF1139
L 71	Inductor	LPSQ3R9K
L 101	Inductor	CTF1126
L 201	Coil	CTB1068
L 202	Coil	CTB1082
L 203	Inductor	LPSQ220K
L 204	Inductor	CTF1199
L 205	Inductor	CTF1198
L 206	Inductor	CTF1197
L 207	Inductor	CTF1115
T 51	Coil	CTE1062
T 52	Coil	CTE1063
T 71	Coil	CTE1058
T 203	Coil	CTB1076
T 204	Coil	CTE1059
T 205	Coil	CTE1060
T 206	Coil	CTE1061
TH 51 102	Thermister (DTN-T204D154K)	GGF-928
CF 52 53	Ceramic Filter	CTF1247
CF 201	Ceramic Filter	CTF1192
CF 202	Ceramic Filter	CTF1191
X 151	Ceramic Resonator	CSS1085
X 201	Crystal Resonator	CSS1014
VR 1	Semi-fixed 2.2kΩ (B)	CCP1015
VR 51 101 102	Semi-fixed 22kΩ (B)	CCP1022
SP 1		DSP-201M
	FM Front End	CWB1063

RESISTORS

Circuit Symbol & No.	Part Name	Part No.
R 1 202		RS1/10S681J
R 2		RS1/16S101J
R 3		RS1/16S333J
R 4		RS1/16S102J
R 5 6 54		RS1/16S472J
R 7		RS1/16S560J
R 8		RS1/16S0R0J
R 9		RS1/16S0R0J
R 56		RS1/16S822J
R 57		RS1/16S472J
R 58 129		RS1/16S473J
R 59		RS1/16S331J
R 64		RS1/16S222J
R 66		RS1/16S103J
R 72		RS1/16S123J
R 73 124 126		RS1/16S103J
R 74		RS1/16S331J
R 75 107		RS1/16S102J
R 76		RS1/16S221J
R 101		RS1/10S471J

======Circuit Symbol & No.	Part Name======	Part No.
R 102		RS1/16S472J
R 104		RS1/16S563J
R 105		RS1/16S332J
R 106 121 123 127 128		RS1/16S683J
R 108 122		RS1/16S104J
R 111		RS1/10S123J
R 112		RS1/16S684J
R 125		RS1/16S154J
R 151 152		RS1/16S152J
R 153		RS1/16S222J
R 201		RS1/16S220J
R 203 206		RS1/16S222J
R 204 213		RS1/16S473J
R 205 209		RS1/16S470J
R 207		RS1/16S822J
R 208 212		RS1/10S103J
R 210		RS1/10S682J
R 211 241 242		RS1/16S103J
R 214		RS1/16S182J
R 243		RS1/10S181J
R 244		RS1/16S561J

CAPACITORS

C 1 111		CEV100M16
C 2 51 59 74		CKSRYF473Z25
C 3		CCSRCH270J50
C 4 55		CKSRYB102K50
C 5		CKSRYB472K50
C 52 53 61		CKSRYB223K25
C 54		CCSRSL101J50
C 56		CKSRYF104Z25
C 57		CSZSR22M35
C 58		CCSRCH060D50
C 60		CEVNP100M25
C 72 73 104 241		CKSRYB103K25
C 75		CKSRYF103Z50
C 101		CKSRYB392K50
C 102		CKSRYB682K25
C 103		CKSRYB272K50
C 105		CSZS2R2M10
C 106		CEVR47M50
C 107 108		CKSRYB222K50
C 110		CEV010M50
C 112		CSZSR47M20
C 121		CEV4R7M35
C 122		CKSRYB471K50
C 123		CSZS0R1M35
C 153		CSZSR47M20
C 154 155		CEV3R3M50
C 156		CSZS3R3M10
C 157		CEV101M10
C 158		CKSRYF473Z25
C 161 162		CKSQYB563K25
C 201		CKSRYB103K25
C 202 212		CKSRYB332K50
C 203 215 219		CKSRYF473Z25
C 204 208		CKSRYB223K25
C 205		CCSRCH220J50
C 206 207		CCSRCH820J50
C 210		CKSQYF223Z25
C 211		CEV2R2M50
C 213		CCSRCH330J50
C 216		CKSQYF473Z25

======Circuit Symbol & No.	Part Name======	Part No.
C 218		CEVNP2R2M35
C 220		CCSRCH430J50
C 221 231		CCSRCH100D50
C 222		CSZS010M16
C 223		CKSRYF333Z25
C 224 229		CEV470M16
C 225		CKSQYF333Z25
C 226		CKSQYF473Z25
C 227		CEV4R7M35
C 228		CKSQYB103K50
C 230		CEV220M6R3
C 232		CKSRYB102K50
C 240		CKSRYF473Z25
C 242		CEV100M16

Unit Number :
Uni Name : Deck Control Unit

MISCELLANEOUS

IC 251	HIC	CWV1014
IC 252		PA3022
IC 701		PD4344B
IC 702		M51953BL
IC 703		M51304L
IC 704		AFM02F007X2
IC 705		MC14051BF
IC 706		HA17358F
IC 707		M54546AL
Q 251 252		2SC2712
Q 253 711		2SD1992A
Q 701 706 710		DTC114EK
Q 702 707		2SA1162
Q 703 708		2SD2037
Q 704 712 713		2SC2712
Q 714		DTC114EK
Q 805		DTC343TK
Q 806		DTC343TK
Q 807 808		DTC343TK
Q 809		DTA124EK
D 251 252 701 702 703 704 708 709 710 714		1SS133
D 253		RD9R1JSB2
D 706		RD6R8JSB2
D 707 711 716		RD5R6JSB2
D 715 719 720		1SS133
D 718		RD7R5JSB2
D 721		RD5R6JSB2
L 701	Inductor	LAU2R2K
TC 701	Trimmer	CCG1002
X 701	CrystalReonator	CSS1023
VR 251 252	Semi-fixed 10KΩ (B)	CCP-378
BZ 701		CPV1011
INV701		CTX1029

RESISTORS

R 251 252		RS1/10S183J
R 253 254 262 263 266 267 268 269 722 723		RS1/10S473J
R 255 256 708 713 725 726 727 728 729		RS1/10S102J
R 257		RS1/10S333J
R 258		RS1/10S392J
R 259		RS1/10S684J
R 260 265		RS1/10S472J
R 261		RS1/10S562J
R 264 703 743 745		RS1/10S473J
R 270 271 272 273 714 715 716 717 774		RS1/10S222J
R 274		RS1/8S471J
R 276		RS1/10S1R0J
R 701 702 709 710 711		RS1/10S221J
R 704 705 706 707		RS1/10S682J
R 712		RS1/10S474J

======Circuit Symbol & No.	Part Name======	Part No.
R 718		RS1/10S104J
R 719 720 721		RS1/10S104J
R 724 741 742 749 759 760 761 775		RS1/10S473J
R 730 731 732 753 754 768 769 773		RS1/10S102J
R 733 734 735 736 737 738 739 740		RS1/10S473J
R 747 751 762 771 779		RS1/10S103J
R 748		RS1/10S153J
R 750 803 804		RS1/10S153J
R 752		RS1/10S560J
R 755		RS1/10S563J
R 756		RS1/10S223J
R 757		RS1/10S563J
R 758		RS1/10S223J
R 763 770		RS1/10S472J
R 764		RD1/4PS222JL
R 765 777		RD1/4PS220JL
R 766		RS1/10S222J
R 772		RD1/4PS821JL
R 776		RS1/10S682J
R 778		RS1/10S102J
R 781		RS1/10S122J
R 801 802 849 850		RS1/10S102J
R 853 854 855 856		RS1/10S223J
R 858		RS1/10S0R0J

CAPACITORS

C 251 252 720		CKSQYB391K50
C 253 254		CEA220M10LS
C 255 256		CEA4R7M35LS
C 257 258		CEA010M50LS2
C 259 260 262 265		CEA100M16LS2
C 261 281 283 707 711 712		CEA101M10LS
C 263 267 268 269 270 271 272 728 729 730		CKSQYF473Z50
C 264		CKSQYB392K50
C 266 701		CCSQSL330J50
C 273		CEAR68M50LS2
C 274		CKSQYF223Z50
C 275 276 710		CEA470M6R3LS
C 277	470 μF/16V	CCH-114
C 278		CEAR15M50LS2
C 279 722		CEA470M16LS
C 280		CEA101M16L2
C 702		CKSYF105Z25
C 703		CEAR22M50LS2
C 704 708		CKSQYB102K50
C 705		CEA4R7M35LS
C 706		CEA330M10LS
C 709		CEAR47M50LS2
C 713 714 715 716 717 718 719		CEA2R2M50LS2
C 721		CEA221M10L2
C 723		CEA6R8M35LS
C 724 732		CKSQYF103Z50
C 725 726		CEA220M16LS
C 731		CKSQYF473Z50

======Circuit Symbol & No.	Part Name======	Part No.

Key Board Unit

Consists of
Display P.C.Board
Right Switch P.C.Board
Left Switch P.C.Board

Unit Number :
Unit Name : Key Board Unit

MESCELLANEOUS

IC 951 952		PCF8576T
IC 953		BX-1393
D 712 713		MA110-1A
D 951		MA151K-MH
D 952		MA151K-MH
D 953		MA153-MC
D 954	LED	BG3433S
IL 951 952	Lamp 14V 40mA	CEL1150
IL 953 954	Lamp 14V 40mA	CEL1150
IL 955 956 957 958	Lamp 14V 40mA	CEL1150
	LCD	CAW1138
	EL	CEL1146

RESISTORS

R 951 952		RS1/10S332J
R 953 954		RS1/10S184J
R 955		RS1/10S273J
R 956 957		RS1/10S103J
R 961		RS1/10S470J
R 962		RS1/10S221J
R 963 964		RS1/8S471J

CAPACITORS

C 951		CSZS010M16
C 952		CSZST470M6R3

Unit Number :
Unit Name : Drive Assy

MISCELLANEOUS

S 601 602	Switch	CSN1012
M 601	Motor	CXM1024

Unit Number :
Unit Name : Control Unit

MISCELLANEOUS

IC 351		UPC1347GS
IC 601		UPD6374GH
IC 602		RC4558M
IC 651		PA3026
IC 653		M5218FP
IC 701		UPD6375GC
IC 702		TC9237F
IC 703		TA2009F
IC 751		PD5156C
IC 752		MB3854PF
Q 351		2SB1260
Q 601		2SB709A
Q 651		2SB1184F5
Q 652		2SB1184F5
Q 654 705		DTC114EK
Q 701 702		DTC323TK
Q 703		DTC114EK
Q 704		DTA114EK
Q 752		DTA114EK
Q 753		DTA114EK

======Circuit Symbol & No.	Part Name======	Part No.
Q 754		DTC114EK
Q 755		2SD1760F5
Q 756		2SD1030
D 651		SC016-2
D 652		SC016-2
D 701		MA151WA-MN
D 751		MA151A-MA
D 757		HZM6R8NB2
D 758		MA151A-MA
L 601 602 603 604 751	Inductor	CTF1082
L 701	Inductor	CTF1082
TH 752	Thermistor	CCX1007
X 701	Crystal Resonator	CSS1067
X 751	Semi-fixed 22kΩ (B)	CSS1084
VR 351		CCP1156
VR 352 355	Semi-fixed 47kΩ (B)	CCP1158
VR 353 354	Semi-fixed 2.2kΩ (B)	CCP1150
VR 356	Semi-fixed 22kΩ (B)	CCP1156

RESISTORS

R 351		RS1/2S220J
R 352 372		RS1/16S472J
R 353		RS1/16S623J
R 354 757 758 779		RS1/16S473J
R 355		RS1/16S122J
R 356		RS1/16S683J
R 357		RS1/16S683J
R 358		RS1/16S332J
R 359		RS1/16S332J
R 360		RS1/16S684J
R 361		RS1/16S153J
R 364		RS1/16S102J
R 369		RS1/16S103J
R 371 373		RS1/16S223J
R 374		RS1/16S912J
R 375 377 713		RS1/16S102J
R 379		RS1/16S513J
R 380		RS1/16S104J
R 381		RS1/16S133J
R 382		RS1/16S133J
R 601 602 603 604 605 607 610		RS1/16S103J
R 606		RS1/16S224J
R 609		RS1/16S102J
R 611 612 665		RS1/16S102J
R 613		RS1/16S102J
R 614		RS1/16S472J
R 615		RS1/16S472J
R 616		RS1/16S102J
R 651 653 701 702 706 711 712 764		RS1/16S102J
R 652		RS1/16S162J
R 654		RS1/16S162J
R 655		RS1/16S752J
R 656		RS1/16S362J
R 657		RS1/16S162J
R 658		RS1/16S102J
R 663		RS1/10S181J
R 664 753 755		RS1/16S103J
R 669 703 797		RS1/16S103J
R 670		RS1/10S151J
R 675		RS1/16S913J
R 676		RS1/16S913J
R 677 681		RS1/16S0R0J
R 679		RS1/16S102J
R 680		RS1/16S0R0J
R 683		RS1/16S0R0J
R 684		RS1/16S102J
R 707 708		RS1/16S223J
R 715		RS1/16S0R0J
R 717		RS1/16S301J
R 719 789		RS1/16S0R0J
R 721		RS1/16S472J
R 722		RS1/16S162J
R 724		RS1/10S1R0J
R 725		RS1/16S472J
R 751		RS1/10S1R0J
R 752		RS1/16S183J
R 754 776		RS1/16S472J
R 756 771 772 773		RS1/16S222J
R 765 793		RS1/16S102J
R 766		RS1/16S473J
R 767 768 769 770		RS1/16S104J
R 774		RS1/16S102J
R 775		RS1/16S104J
R 778		RS1/16S103J
R 780		RS1/16S104J
R 781 782		RS1/16S362J
R 783 784 785 786 787		RS1/16S681J
R 788		RS1/16S102J
R 791 792		RS1/16S391J
R 794		RS1/16S151J
R 799		RS1/10S1R5J

CAPACITORS

C 351		CEV470M16
C 352		CKSQYB104K25
C 353 709		CEV101M6R3
C 354 355		CSZSR4R7M10
C 357 359 366		CKSRYB102K50
C 358		CKSRYB331K50
C 360		CKSRYB271K50
C 361		CCSRCH220J50
C 367		CKSYB154K25
C 368		CKSQYB104K25
C 369 373 604 606 703 704		CKSYB224K25
C 370		CKSQYB473K50
C 601		CKSRYB222K50
C 602		CKSRYB222K50
C 603		CKSRYB331K50
C 605		CKSYB103K25
C 607 654 759 760		CKSYB224K25
C 608		CSZS010M16
C 609 610 761		CEV100M16
C 611 701 707 710		CKSRYB103K25
C 651 702 708		CEV101M6R3
C 652		CKSYB224K25
C 655 668		CKSRYB391K50
C 658	470 μF/10V	CCH1120
C 662 665		CEV101M10
C 666		CKSQYB102K50
C 670		CKSQYB273K50
C 671		CKSRYB103K25
C 672		CKSQYB473K25
C 705 706		CCSRCH090D50
C 712		CEV470M6R3
C 713 714		CKSRYB561K50
C 715		CCSRCH100D50
C 716		CEV100M16
C 722 723		CEV4R7M35
C 724		CCSRCH151J50
C 726		CCSRCH100D50
C 727 728		CKSRYB103K25
C 751 752		CCSRCH221J50
C 753 754 755		CCSRCH221J50

======Circuit Symbol & No.	Part Name======	Part No.
C 756		CKSRYB472K50

Unit Number :
Unit Name : Switch P.C.Board (CD Mechanism Module)

D 1 2 3 4		BR4361F
M 1	Motor (Spindle)	CXM1058
M 2	Motor Unit (Carriage)	CXA4649
M 3	Motor Unit (Loading)	CXA4267
S 1 2	Switch (Home, Clamp)	CSN1012

Unit Number :
Unit Name : Detector P.C.Board

P 1 2 3 4	PhotoTransistor	PT4800

Unit Number :
Unit Name : Switch P.C.Board(Casette Mechanism Assy)

S 1	Switch (CST SET)	CSN-089
S 2 3	Switch (CST IN.7 μS)	CSN1003
MR 1 2		DM-106B

Unit Number :
Unit Name : P.C.Board Unit

D 1 2 3 4		1S1555

Miscellaneous Parts List

HD 1	Head Unit	CXA3096
M 1 2	Motor (Head FF/REW)	CXM1030
M 3	Motor (Capstan)	CXM1055
S 4	Switch (Door)	CSN1005
IL 959	Lamp 14V 40mA	CEL1257
	PU Unit	CGY1020

●The FH-M70/ES Parts List enumerates the parts which differ from those for the FH-M75/UC only.
The parts other than those enumerated in the FH-M70/ES Parts List are indentical with those in the FH-M75/UC Parts List,to which you are requested to refer,accordingly.
The FH-M75/UC Parts List is given on page 170.

Amp P.C.Board

	FH-M75/UC	FH-M70/ES
Circuit Symbol & No.	Part No.	Part No.
Q407	·····	DTC143TK
Q408	·····	DTC144EK
R450	·····	RS1/10S223J
R451	·····	RS1/10S102J
R452,453	·····	RS1/10S822J
R454	·····	RS1/10S104J
R455	·····	RS1/10S562J
R456	·····	RS1/10S223J
R463,489,490	·····	RS1/10S473J
R464	·····	RS1/10S473J
R497	·····	RS1/10S472J
C412	·····	CEA010M50LS2
C413	·····	CEA4R7M35LS
C414	·····	CCSQSL101J50
C415	·····	CEA2R2M50LS2
C416	·····	CEA2R2M50LS2

Deck Control Unit

	FH-M75/UC	FH-M70/ES
Circuit Symbol & No.	Part No.	Part No.
R745	RS1/10S473J	·····
R746	·····	RS1/10S473J

28. CIRCUIT DESCRIPTION

• Voice Canceler Circuit (FH-M70/ES)

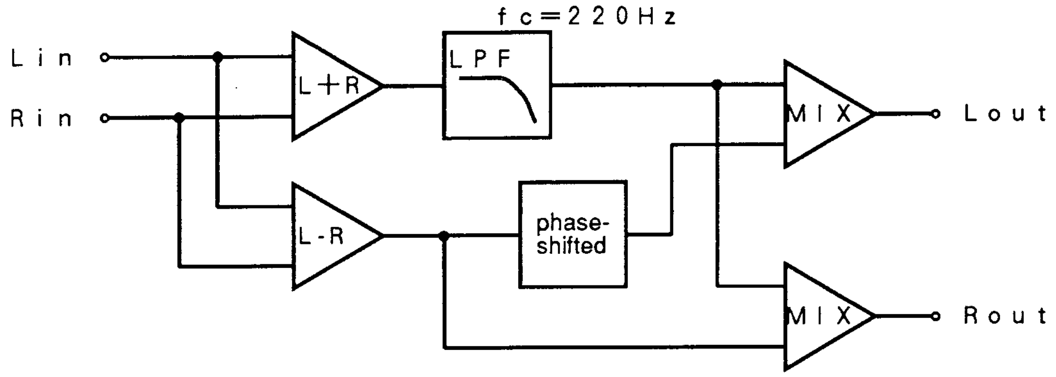


Fig. 79

The voice canceler circuit is to remove the identical phase component in the voice-frequency bandwidth of right- and left-channel signals. And it has circuit blocks as shown on the drawing above.

For signal flow, (right + left) signals are made to pass through a low-pass filter, first of all, to remove their components beyond the voice-frequency bandwidth. These signal are mixed with those from which right- and left-channel components have been removed. And, high-pass components are added. To provide an output signal with a stereophonic feeling, however, the (right - left) signal is phase-shifted and addad to each of the right and left channels.

• Indicating An Error Number

If the CD should fail to operate in either single or multi mode, or if an error has taken place during the operation and resulted in an error, the player will enter into the error mode. And the cause of such error is numerically indicated.
This is aimed at assisting an analysis or a repair.

(1) Basic Means of Display

- With ERROR indicated in "MODE" on P-BUS Display date, an error code is transmitte by the use of MIN and SEC.
  Identical date are transmitted with MIN and SEC.
- Examples of Head Unit Display

E-XX	(4 digits)
Err-XX	(6 digits)
ERR-XX	(6 digits)
ERROR-XX	(8 digits)

(2) Number of Error Codes
100 codes, randing from 00 thut 99; a litte more extensible if "A" and "L" are used.

(3) Error Codes

Error Code	Classification	Mode	Description	Detail/Cause
10	ELECTRIC	SET UP	Carriage home failure	Unmovable to and from the inner circumference → Home switch failed and/or carriage improper moved
11	↑	↑	Focus failure	Focussing failed → Disk scarred or stained on the back or vibrating hard
12	↑	↑	SET UP failure	Spindle failed to lock or subcode extraordinary → Spindle defective, disk other than audio and ROM
30	↑	SEARCH	Search time out	Target address failed to reach → Carriade/tracking improperly and/or disk scarred
A0	SYSTEM	—	Power failure	Power overvoltage or short circuit detected → Switching transistor defective and/or power abnormal
50			An error upon ejection	MAG SW release time has timeout.
60			An error while putting in and out the tray	Tray in/out time has timeout. Tray is caught when put in.
70			An error upon elevation	Elevation time has timeout.
80			An error with an empty magazine inserted	No disk is available.

*In the CD single mode, no error is indicated with the mechanism separately.
If TOC has failed to be read in, the operation will continue anyway.
Error Code A0 is peculiar to the this unit and inapplicable to another future CD player.

• New Test Mode (aging operation and setup analysis)

The CD, either single or multiple, plays in the normal mode. After being set up, it will display FOK (focus), LOCK (spindle), subcode, sound skip, protection against a mechanical error or the like, occurrence of an error, cause and time of an expiry, if any, (and disc number in the multi-mode).
During the setup, the CD software operation status (internal RAM and C-point) is displayed.
The software on the head unit side does not involve any special problem but runs normally.
Since it is nesessary to cope with the error number display function.

(1) How to Put in the NEW TEST Mode
See the test mode flow chart Page 50.
(2) Relations of keys between TEST and NEW TEST Modes.

P-BUS Commands	Keys	Test Mode		New Test Mode	New Test Mode
		Regulator OFF	Regulator ON	Play in progress	Error Protection } Talking place
B0	BAND/REL	Regulator ON	Regulator OFF	BAND/REL	Time of occurrence Cause of error } Selected
B1	►►I	—	FWD-KICK	►►I	—
B2	I◄◄	—	REV-KICK	I◄◄	—
B3	F・1	—	TRACKING CLOSE	F・1	—
B4	F・4	—	TRACKING OPEN	F・4	—
B5	F・2	—	FOCUS CLOSE	F・2	—
B6	—	—	FOCUS OPEN	—	—
B7	—	—	Jump-OFF	—	—
B8	F・3	To new Test Mode	Jump-Mode selected	F・3	Occurrence TNo Time of occurrence } Selected

Operations, such as EJECT, CD ON/OFF, etc. are to be performed normally

(3) Error Cause (Error Number) Code

Error Code	Classification	Mode	Description	Cause/Detail	
40	ELECTRIC	PLAY	FOK = L 100 ms	Put out of focus	Scar, Stain, Vibration, Servo defect, etc...
41	↑	↑	LOCK = L 100 ms	Spindle unlocked	
42	↑	↑	Subcode unacceptable 500 ms	Subcode failes to read	
43	↑	↑	Sound skipped	Last address memory operated	

*With CD single, no mechanical error is displayed while aging. The error code is identical with those in the normal mode.

(4) Indicating an Operation Status During Setup

Status No.	Description	Protection operation
01	Carriage home mode started	None
02	Carriage moving on the internal circumference	10-second time out
03	Carriage moving on the external circumference	10-second time out
11	Setup started	None
12	Spindle turn/Focus search started	None
13	Waiting for focus closing	Failure to focus closing
14	Spindle kicked and focus checked	Out of focus
15	Tracking closed and focus checked	Out of focus
17	Carriage closed and focus checked	Out of focus
18	Lock subcode } Waiting	Failure to lock, Subcode failed to read out of focus
19	End	None

(5) Example of 7-segment Display

(a) SET UP in progress

TRACK MIN SEC
11 11 11
TRACK
11
MIN SEC
11 11

While in the TEST MODE, a status number is indicated in TNO, MIN and SEC.

(b) Operation (PLAY, SEARCH, etc.) in progress Perfectly identical with that in the multi mode.

(c) Protection/Error upon occurrence

ERROR-XX
Err-XX, ERR-XX
E-XX

While in the error mode, an error number is displayed in MIN and SEC.

Select the display with the BAND/REL key.

TRACK MIN SEC
10 40 05
TRACK
10
MIN SEC
40 05

} Select the display with the F · 3 key.

While in the PLAY MODE, an adsolute time is indicated in TNO, MIN and SEC.